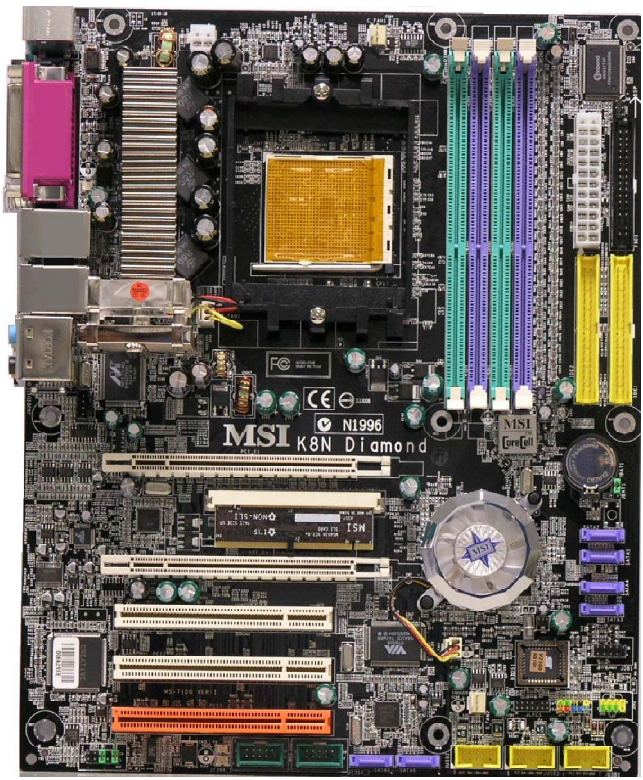
K8N Diamond

MS-7100 (v1.0) ATX Mainboard



G52-M7100X1

Manual Rev: 1.0
Release Date: Dec. 2004

CE N1996

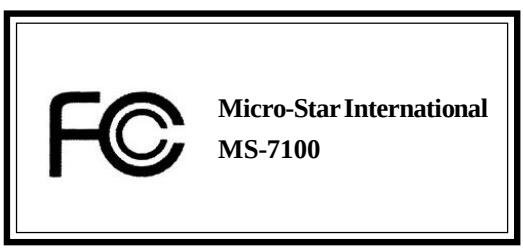
FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation

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Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X with nVIDIA nForce4 SLI	Dec. 2004

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

† Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw** & **http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php**

† Contact our technical staff at: **support@msi.com.tw**

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - † The power cord or plug is damaged.
    - † Liquid has penetrated into the equipment.
    - † The equipment has been exposed to moisture.
    - † The equipment has not work well or you can not get it work according to User's Manual.
    - † The equipment has dropped and damaged.
    - † The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60^0 C (140^{0}F), it may damage the equipment.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

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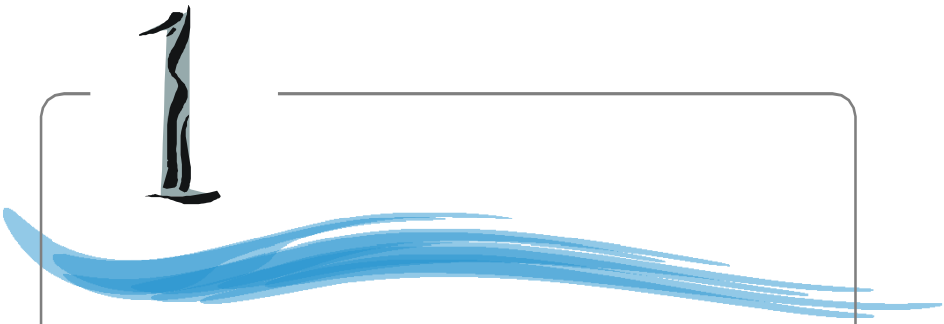


Getting Started

Thank you for choosing the **K8N Diamond** (MS-7100) v1.X ATX mainboard. The **K8N Diamond** mainboard is based on ***n*VIDIA® nForce™4 SLI** chipset for optimal system efficiency. Designed to fit the advanced **AMD® K8 Athlon 64 FX / Athlon 64** processor, the **K8N Diamond** mainboard delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

† Supports Socket-939 for AMD K8 Athlon 64 FX / Athlon 64 (Socket939) processor
† Supports up to 4000+ Athlon FX55 , or higher CPU
(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

† nVIDIA nForce4 SLI
- HyperTransport link to the AMD Athlon 64/Athlon 64 FX CPU
- HyperTransport supporting speed up to 1GHz (2000MT/s)
- Supports 2 PCI Express x16/ x1 interface
- Two independent SATA controllers, for four drives
- Dual Fast ATA-133 IDE controllers
- IEEE802.3 nVIDIA MAC for 1000BASE-T

Main Memory

† Supports dual channel, eight memory banks DDR 266/333/400, using four 184-pin DDR DIMMs
† Supports a maximum memory size up to 4GB
† Supports 2.5v DDR SDRAM DIMM
(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.)

Slots

† Two PCI Express x16 slots (supports PCI Express Bus specification v1.0a compliant)
† 2nd PCI Express x16 slot (PCI_E3) is compatible with PCI Express x 1
† Three 32-bit Master PCI Bus slots, includes one orange slot which is reserved as a communication slot.
† Support 3.3V/5V PCI bus Interface

On-Board IDE

† An IDE controller on the nVIDIA® nForce4 SLI chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 66/100/133 operation modes
† Can connect up to 4 IDE devices

On-Board SATA

† NV RAID supports 4 SATA II ports (SATA1-4). Transfer rate is up to 300 MB/s. Supports RAID 0, 0+1 and JBOD mode.
† Silicon Image's SATARAID supports another 2 SATA II ports (SATA5/6). Transfer rate is up to 300 MB/s. Supports RAID 0 & 1 mode.

USB Interface

† 10 USB ports
- Controlled by nForce4 SLI chipset
- 4 ports in the rear I/O, 6 ports via the external bracket

NV RAID (Software)

† Supports up to 4 SATA and 2 ATA133 Hard drives
- RAID 0 or 1, 0+1, JBOD is supported
- RAID function available for ATA133+SATA H/D or 4 SATA H/D drives

Silicon Image's SATARAID (Software) (Optional)

† RAID 0 or 1 and multiple RAID groups are supported

† Support up to 2 SATA devices connected to a single controller

Dual LAN

† Supports dual LAN jacks
- 1st LAN supports 10/100/1000 Fast Ethernet by nForce4 SLI
- 2nd PCI Express LAN supports 10/100/1000 Fast Ethernet by Marvell 88E8053

IEEE 1394

† Supports up to three 1394 ports (rear panel x 1, pinheader x 2). Transfer rate is up to 400Mbps

Audio

† Power by Creative Sound Bluster 24 bits H/W audio
- 24-bit / 96~192 KHz audio quality
- Up to 100 db SNR clarity
- 7.1 Channel output supported, Dolby Digital decoder
- Supports S/PDIF digital interface
- PCI 2.3 Specification compliant

On-Board Peripherals

† On-Board Peripherals include:
- 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 serial port (COM1)
- 1 parallel port supporting SPP/EPP/ECP mode
- 1 Audio jack(5-in-1), coaxial/fiber SPDIF out
- 1 D-Bracket 2 pinheader
- 1 CD-In pinheader
- 3 IEEE 1394 (Rear * 1 / Front * 2)
- 10 USB1.1/2.0 ports (Rear * 4 / Front * 6)
- 1 IrDA pinheader

BIOS

† The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
† The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.
† Supports boot from LAN, USB Device 1.1 & 2.0, and SATA HDD.

Dimension

† ATX Form Factor (30.4 cm X 24.4 cm)

Mounting

† 9 mounting holes

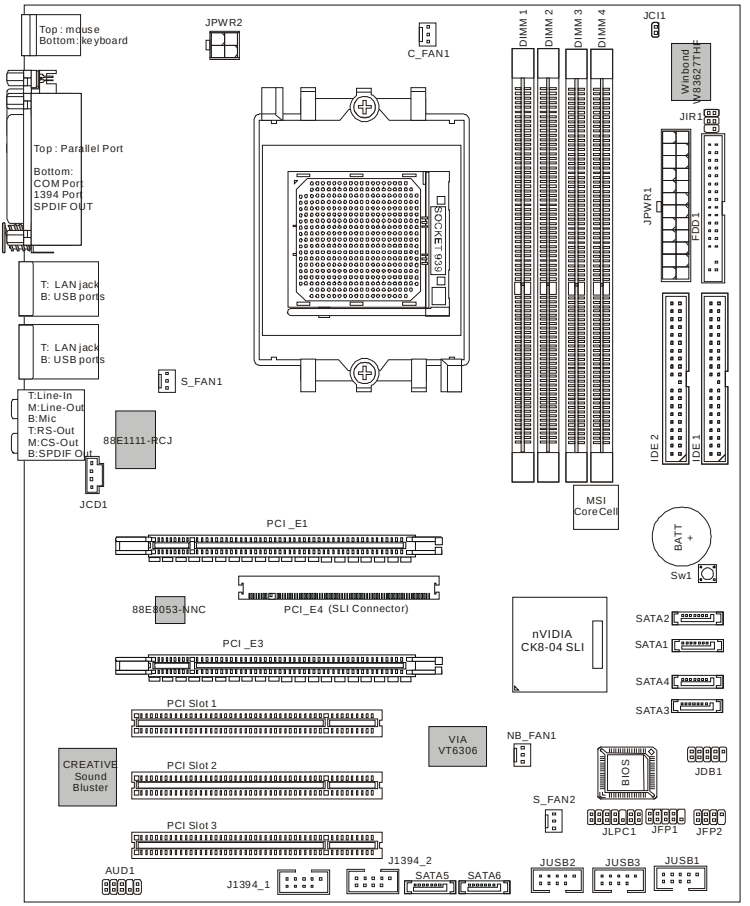
MSI Reminds You...

To create a bootable RAID volume for a Windows 2000 environment, Microsoft's Windows 2000 Service Pack 4 (SP4) is required. As the end user cannot boot without SP4, a combination installation CD must be created before attempting to install the operating system onto the bootable RAID volume.

To create the combination installation CD, please refer to the following website:

http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm

Mainboard Layout



K8N Diamond (MS-7100 v1.X) ATX Mainboard

Packing Contents

MSI motherboard

MSI Driver/Utility CD
SATA RAID Driver
Diskette/ Creative
Audio Driver

SATA Cable/
Power Cable (Optional)

SLI Switch card

SLI bridge

D-Bracket 2
(Optional)

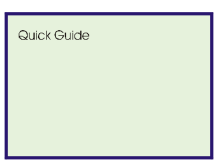
Round Cable of
Floppy Disk

1394 Cable
(Optional)

Round Cable of
IDE Devices

Back IO Shield

User's Guide/
Test Report



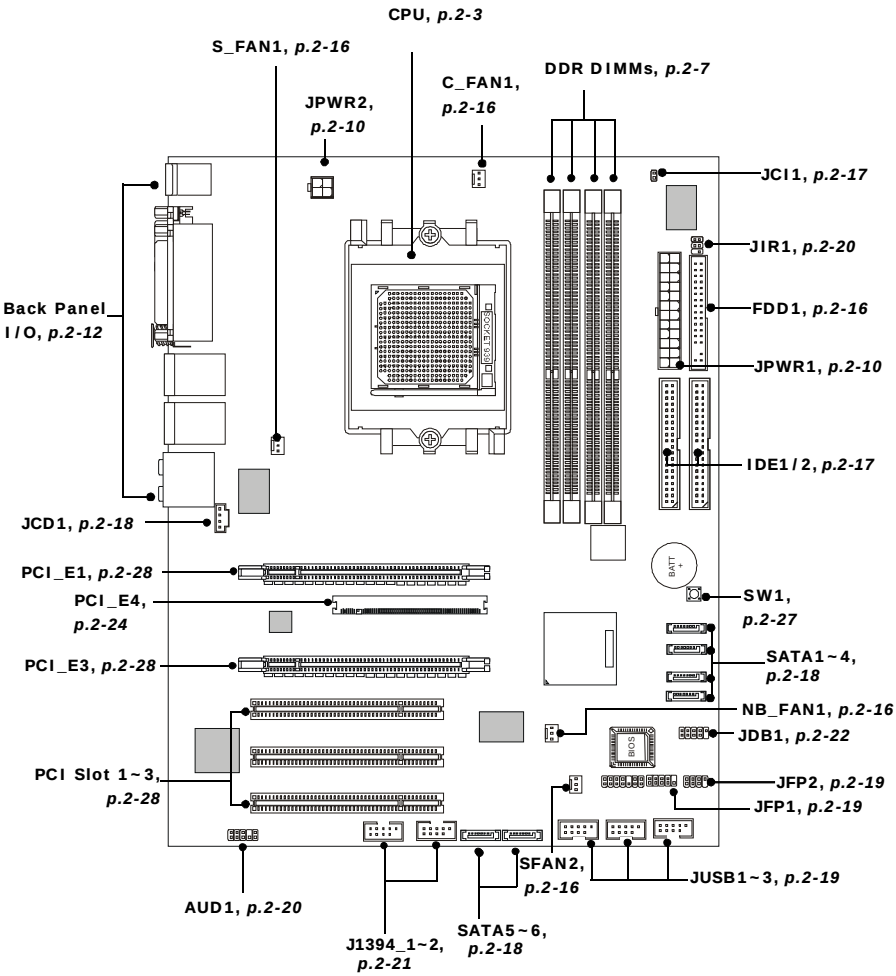
Quick Guide

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports AMD® Athlon64/ Athlon64 FX processors. The mainboard uses a CPU socket called Socket-939 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.

MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

CPU Installation Procedures for Socket 939

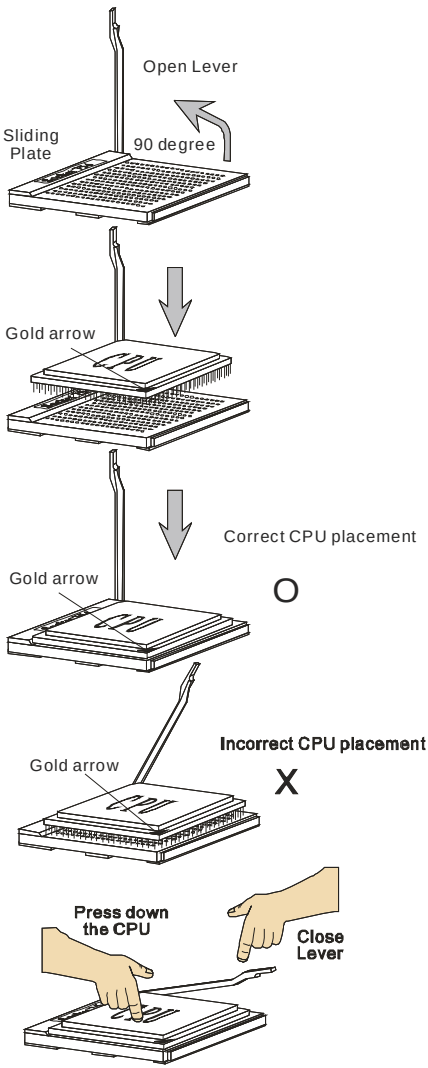
1. Please turn off the power and unplug the power cord before installing the CPU.

2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.

3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.

4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.

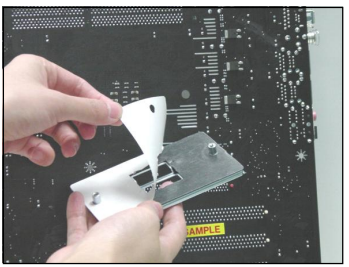
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



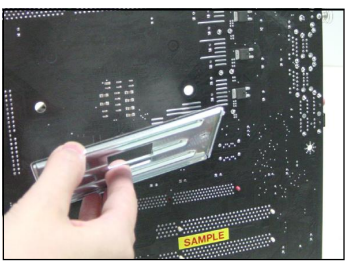
Installing AMD Athlon64/ Athlon64 FX CPU Cooler Set

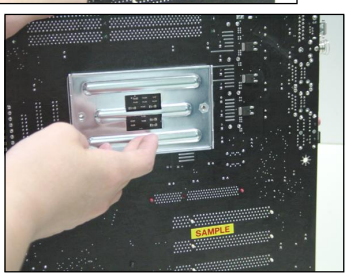
When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

1. Detach the shield of the backplate's paster.



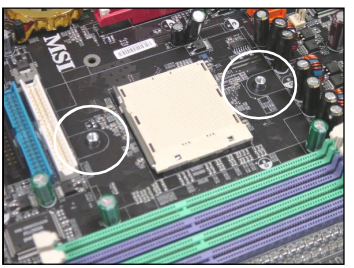
2. Turn over the mainboard, and install the backplate to the proper position.





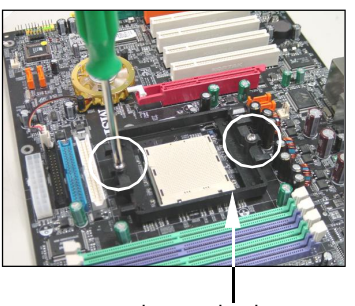
3. Turn over the mainboard again, and place the mainboard on the flat surface.

   Locate the two screw holes of the mainboard.



4. Align the retention mechanism and the backplate.

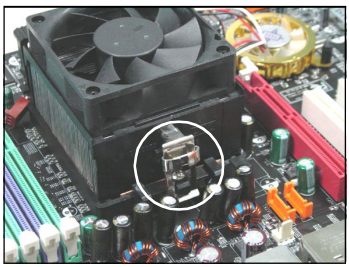
   Fix the retention mechanism and the backplate with two screws.



retention mechanism

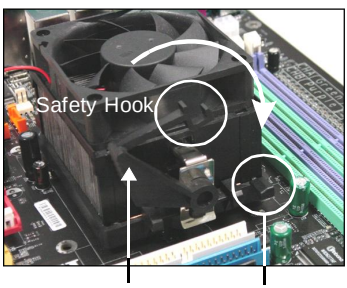
5. Position the cooling set onto the retention mechanism.

   Hook one end of the clip to hook first, and then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.

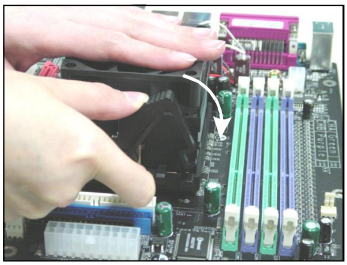


6. Locate the Fix Lever, Safety Hook and the Fixed Bolt.

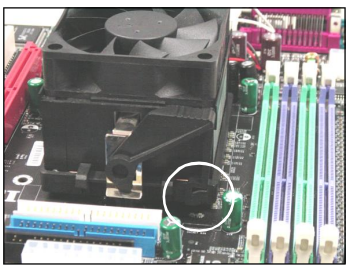
   Lift up the intensive fixed lever.



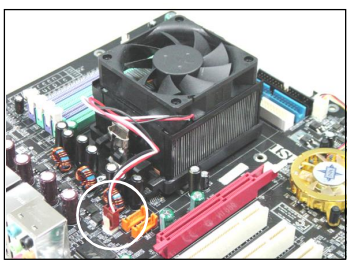
7. Fasten down the lever.



8. Make sure the safety hook completely clasps the fixed bolt of the retention mechanism.



9. Attach the CPU Fan cable to the CPU fan connector on the mainboard.

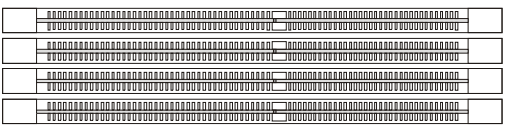


MSI Reminds You...

While disconnecting the Safety Hook from the fixed bolt, it is necessary to keep an eye on your fingers, because once the Safety Hook is disconnected from the fixed bolt, the fixed lever will spring back instantly.

Memory

The mainboard provides 4 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 4GB. You can install DDR266/ 333/400 modules on the DDR DIMM slots (DDR 1~4).
For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.



DIMM1~4
(from bottom to top)

Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DIMM Module Combination

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Please note that ***each DIMM can work respectively for single-channel DDR, but there are some rules while using dual-channel DDR*** (Please refer to the suggested DDR population table below)***.*** Users may install memory modules of different type and density on different-channel DDR DIMMs. However, the ***same type and density memory modules*** are necessary while using dual-channel DDR, or instability may happen. Please refer to the following table for detailed dual-channel DDR. Other combination not listed below will function as single-channel DDR.

GREEN	PURPLE	GREEN	PURPLE	
DIMM1 (Ch A)	DIMM2 (Ch B)	DIMM3 (Ch A)	DIMM4 (Ch B)	System Density
128MB~1GB	128MB~1GB			256MB~2GB
		128MB~1GB	128MB~1GB	256MB~2GB
128MB~1GB	128MB~1GB	128MB~1GB	128MB~1GB	512MB~4GB

MSI Reminds You...

- *Dual-channel DDR works **ONLY** in the 3 combinations listed in the table shown in the previous page.*
- *Please select the identical memory modules to install on the dual channel, and DO NOT install three memory modules on three DIMMs, or it may cause some failure.*
- *Always insert the memory modules into the GREEN slots first, and it is strongly recommended not to insert the memory modules into the PURPLE slots while the GREEN slots are left empty.*
- *This mainboard DO NOT support the memory module installed with more than 18 pieces of IC (integrated circuit).*

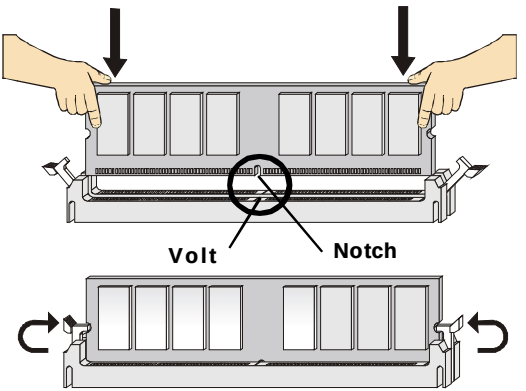
Recommended Memory Combination List

DIMM Slots				Max Speed
Green	Purple	Green	Purple	
DIMM1	DIMM2	DIMM3	DIMM4	
S	-	-	-	DDR400
-	-	S	-	DDR400
D	-	-	-	DDR400
-	-	D	-	DDR400
S	-	S	-	DDR400
D	-	D	-	DDR333
S	S	-	-	DDR400
-	-	S	S	DDR400
D	D	-	-	DDR400
-	-	D	D	DDR400
S	S	S	S	DDR400
D	D	D	D	DDR333

S: Single Side D: Double Side

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.



MSI Reminds You...

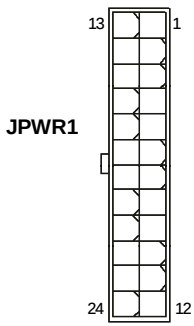
You can barely see the golden finger if the module is properly inserted in the socket.

Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 24-Pin Power Connector: JPWR1

This connector allows you to connect an SSI power supply. To connect the SSI power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

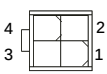


Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	NC	24	GND

ATX 12V Power Connector: JPWR2

This 12V power connector is used to provide power to the CPU.



JPWR2

JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

MSI Reminds You...

1. *These two connectors connect to the ATX power supply and have to work together to ensure stable operation of the mainboard.*
2. *Power supply of 450 watts (and above) is highly recommended for system stability.*
3. *For ATX 12V power connection, it should be greater than 18A.*
4. *For this model, you **must** use the power supply that with a -5V pin supply.*

Important Notification about Power Issue

NForce chipset is very sensitive to ESD (Electrostatic Discharge), therefore this issue mostly happens while the users intensively swap memory modules under S5 (power-off) states, and the power code is plugged while installing modules. Due to several pins are very sensitive to ESD, so this kind of memory-replacement actions might cause system chipset unable to boot. Please follow the following solution to avoid this situation.

Unplug the AC power cable (shown in figure 1) or unplug the JPWR1 & JPWR2 power connectors (shown in figure 2 & figure 3) before the 1st installation or during system upgrade procedure.

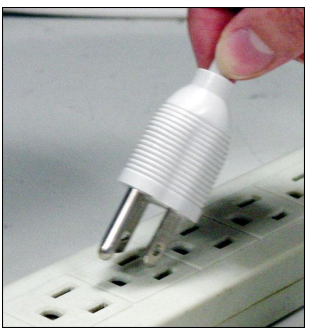


Figure 1:
Unplug the AC power cable

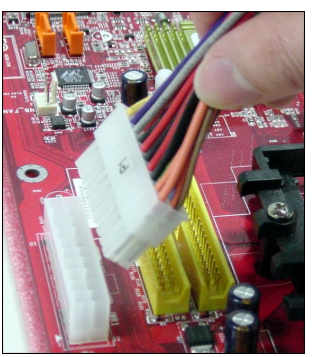


Figure 2:
Unplug the JPWR1 power conn.

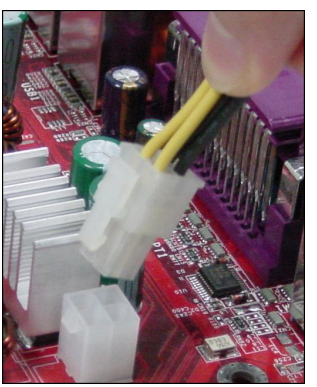
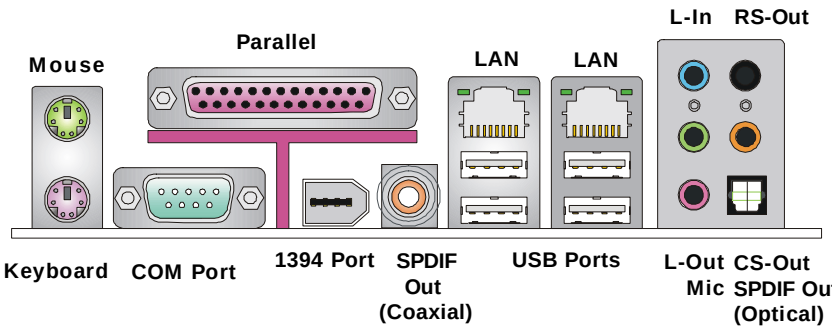


Figure 3:
Unplug the JPWR2 power conn.

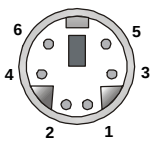
Back Panel

The back panel provides the following connectors:



Mouse Connector (Green) / Keyboard Connector (Purple)

The mainboard provides a standard PS/2® mouse/keyboard mini DIN connector for attaching a PS/2® mouse/keyboard. You can plug a PS/2® mouse/keyboard directly into this connector. The connector location and pin assignments are as follows:



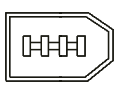
PS/2 Mouse / Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse/Keyboard Data	Mouse/Keyboard data
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse/KeyboardClock	Mouse/Keyboard clock
6	NC	No connection

IEEE1394 Port

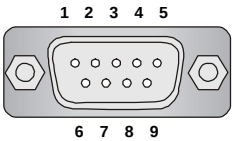
The back panel provides one standard IEEE 1394 port. The IEEE1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.



IEEE1394 Port

Serial Port Connector

The mainboard offers one 9-pin male DIN connector as the serial port. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.



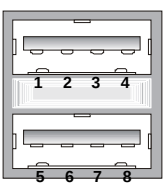
9-Pin Male DIN Connector

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

USB Connectors

The mainboard provides two OHCI (Open Host Controller Interface) Universal Serial Bus roots for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



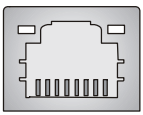
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

LAN (RJ-45) Jack

The mainboard provides 2 standard RJ-45 jacks for connection to single Local Area Network (LAN). This Giga-bit LAN enables data to be transferred at 1000, 100 or 10Mbps. You can connect a network cable to either LAN jack.



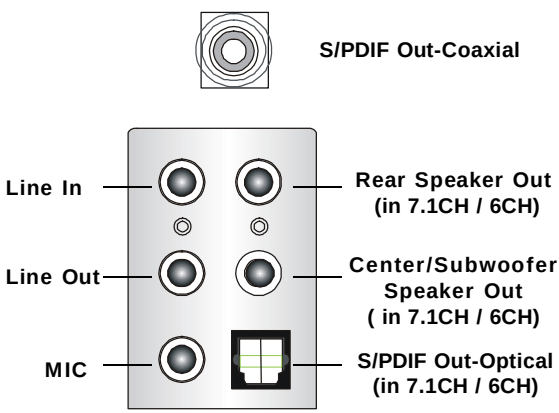
RJ-45 LAN Jack

Giga-bit LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

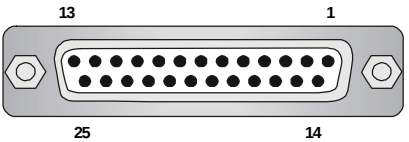
Audio Port Connectors

The left 3 audio jacks are for 2-channel mode for stereo speaker output: **Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones. However, there is an advanced audio application provided by Creative CA0106 to offer support for **7.1-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/5.1-/7.1 channel audio.



Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	PaperEnd
13	SELECT	Select
14	AUTO FEED#	AutomaticFeed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, USB Ports, IR module and CPU/System FAN.

Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

FDD1

Fan Power Connectors: C_FAN1 / S_FAN1 / S_FAN2 / NB_FAN1

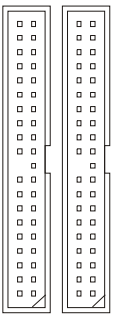
The C_FAN1 (processor fan), S_FAN1 (system fan 1), S_FAN2 (system fan 2) and NB_FAN1 (NorthBridge Chipset fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

MSI Reminds You...

1. *Always consult the vendors for proper CPU cooling fan.*
2. *CPUFAN1 supports fan control. You can install **Core Center** utility that will automatically control the CPU fan speed according to the actual CPU temperature.*
3. *Please refer to the recommended CPU fans at AMD® official website.*

Hard Disk Connectors: IDE1 / IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100/133 function. You can connect up to four hard disk drives, CD-ROM, or other devices.



IDE2 **IDE1**

IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

MSI Reminds You...

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Chassis Intrusion Switch Connector: JCI1

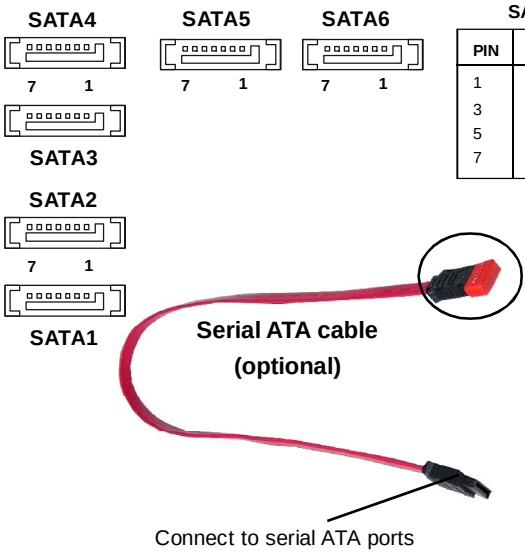
This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JCI1

Serial ATA/Serial ATA RAID Connectors controlled by nForce4 SLI: SATA1 / SATA2 / SATA3 / SATA4;
Serial ATA/Serial ATA RAID Connectors controlled by Silicon Image's SATARAID: SATA5 / SATA6

The single chip of this mainboard is nForce4 SLI which supports four serial ATA connectors SATA1~SATA4. Silicon Image's SATARAID of this mainboard supports another two serial ATA connectors SATA5/ SATA6.

SATA1~SATA6 are high-speed Serial ATA interface ports. Each supports serial ATA data rates of 300MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device. Please refer to the *nVidia RAID Introduction* & *Silicon Image RAID Introduction* for detail software installation procedure.



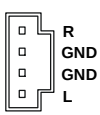
SATA1~ SATA6 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

MSI Reminds You...
Please do not fold the serial ATA cable in a 90-degree angle, which will cause the loss of data during the transmission.

CD-In Connector: JCD1

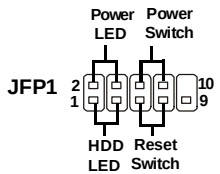
The connector is for CD-ROM audio connector.



Front Panel Connectors: JFP1 / JFP2

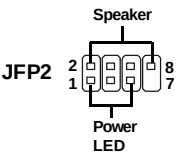
The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JFP1 Pin Definition



PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FPPWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

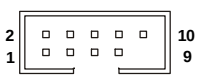
JFP2 Pin Definition



PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

Front USB Connectors: JUSB1 / JUSB2 / JUSB3

The mainboard provides three standard USB 2.0 pin headers *JUSB1 & JUSB2* & JUSB3. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.



JUSB1, JUSB2, JUSB3
(USB 2.0)

JUSB1 & JUSB2 & JUSB3 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

Connected to JUSB1, JUSB2, or JUSB3 (the USB pinheader in *YELLOW* color)

MSI Reminds You...
Note that the pins of VCC and GND must be connected correctly, or itmay cause some damage.

Front Panel Audio Connector: AUD1

The AUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.

AUD1

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

MSI Reminds You...
If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.

IrDA Infrared Module Header: JIR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function. JIR1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

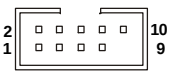
JIR1

JIR1 Pin Definition

Pin	Signal	Pin	Signal
1	NC	2	NC
3	VCC5	4	GND
5	IRTX	6	IRRX

IEEE 1394 Connectors: J1394_1 / J1394_2

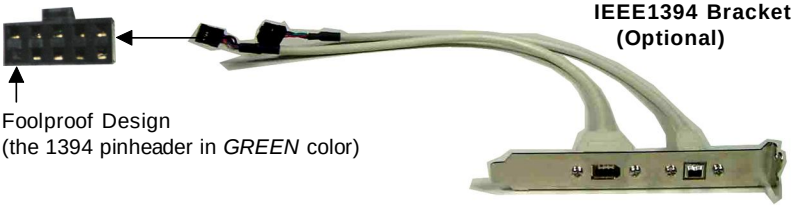
The mainboard provides two 1394 pin headers that allow you to connect IEEE 1394 ports via an external IEEE1394 bracket.



J1394_1/ J1394_2

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground



D-Bracket™ 2 Connector: JDB1

The mainboard comes with a JDB1 connector for you to connect to D-Bracket™ 2. D-Bracket™ 2 is a USB Bracket that supports both USB1.1 & 2.0 spec. It integrates four LEDs and allows users to identify system problem through 16 various combinations of LED signals.

JDB1

Pin Definition

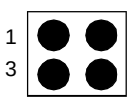
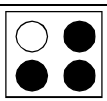
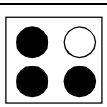
Pin	Signal
1	DBG1 (high for green color)
2	DBR1 (high for red color)
3	DBG2 (high for green color)
4	DBR2 (high for red color)
5	DBG3 (high for green color)
6	DBR3 (high for red color)
7	DBG4 (high for green color)
8	DBR4 (high for red color)
9	Key
10	NC

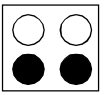
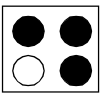
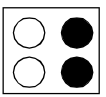
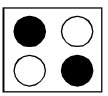
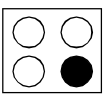
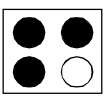
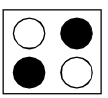
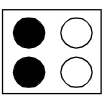
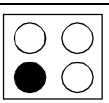
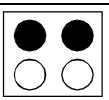
D-Bracket™ 2 is an external USB bracket integrating four Diagnostic LEDs, which use graphic signal display to help users understand their system. The LEDs provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

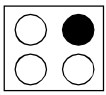
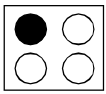
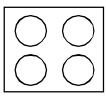
D-Bracket™ 2 supports both USB 1.1 & 2.0 specification.

D-Bracket™ 2

● **Red** ○ **Green**

D-Bracket™ 2	Description
	System Power ON The D-LED will hang here if the processor is damaged or not installed properly.
	Early Chipset Initialization
	Memory Detection Test Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.

	Decompressing BIOS image to RAM for fast booting.
	Initializing Keyboard Controller.
	Testing VGA BIOS This will start writing VGA sign-on message to the screen.
	Processor Initialization This will show information regarding the processor (like brand name, system bus, etc...)
	Testing RTC (Real Time Clock)
	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
	BIOS Sign On This will start showing information about logo, processor brand name, etc...
	Testing Base and Extended Memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
	Assign Resources to all ISA.
	Initializing Hard Drive Controller This will initialize IDE drive and controller.

D-Bracket™ 2	Description
	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller.
	Boot Attempt This will set low stack and boot via INT 19h.
	Operating System Booting

NV SLI (Scalable Link Interface) Connector: PCI_E4

NVIDIA SLI (Scalable Link Interface) technology allows two GPUs to run in tandem within a system to achieve up to twice the performance of a single graphics card. To utilize this technology, the two GPU cards must be connected by an SLI bridge card.

You can find an SLI switch card on the mainboard configured to **non-SLI** mode by default (fig.1).

SLI Switch Card

SLI Bridge Card

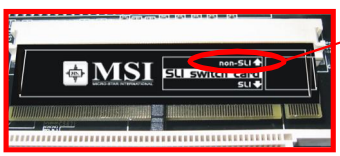


Fig.1

If you intend to use the SLI interface for better graphics performance, please refer to the following instructions.

1. Turn the latch either right or left to loosen the SLI switch card (refer to fig.2).

Fig.2

MSI Reminds You...
Make sure that you power off the system before removing the SLI switch card.

2. Remove the SLI switch card. Flip it over to the other side (SLI mode side) and insert it slantwise (at 40-degree angle) into the NV SLI connector (fig.3).

Fig.3

3. Press down the SLI switch card and secure it with the latch (fig.4). Before installing or removing an NV SLI module, make sure that you unplug the power supply first.

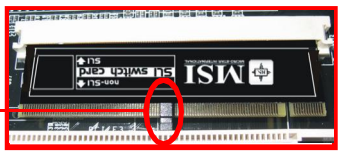


Fig.4

4. After configuring the switch card to SLI mode, you can now install two graphics cards on PCI Express x16 slots. With two cards installed, an SLI bridge card is required to connect the atop golden fingers of these two graphics cards (fig.5). Please note that although you have installed two graphics cards, only the video outputs on the first card will work. Hence, you only need to connect a monitor to the first PCI Express card.

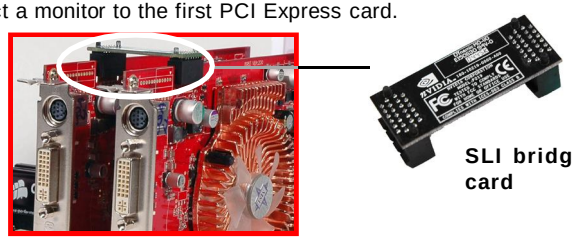
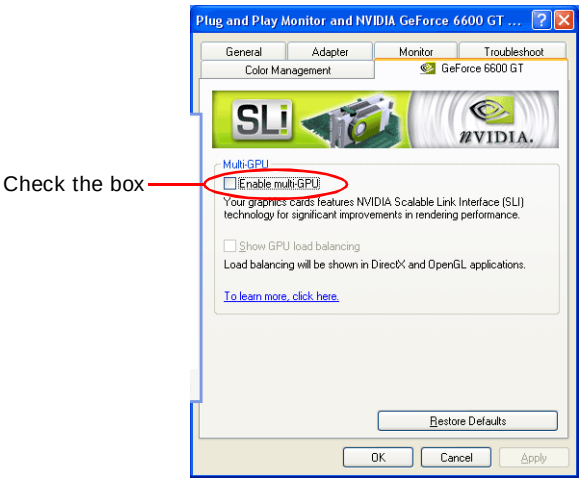


Fig.5

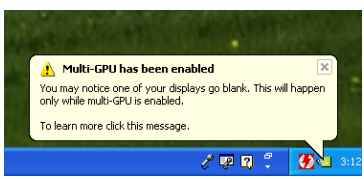
MSI Reminds You...

1. *Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.*
2. *If you intend to install only **ONE** x16 graphics card, make sure that: a. your graphics card is Installed on the PCI_E1 slot;*
   *b. the SLI switch card is set to **non-SLI** mode.*
3. *If you intend to install **TWO** x16 graphics cards, make sure that:*
   a. these two graphics cards are of the same brand and specifications;
   *b. the SLI switch card is set to **SLI** mode.*

5. After the hardware installation is completed, restart the system and install the NV SLI driver/utility. A configuration panel will be provided for Multi-GPU control. Check the ***Enable multi-GPU*** box to enable the SLI function for the onboard graphics cards (concerning the details of multi-GPU settings, please refer to your graphics card manual) .



6. Restart your system and a pop-up will show in the system tray confirming that ***Multi-GPU has been enabled***.


Multi-GPU has been enabled
You may notice one of your displays go blank. This will happen only while multi-GPU is enabled.
To learn more click this message.
3:12

MSI Reminds You...
If you want to remove one graphics card and quit the SLI function, make sure that you reset the SLI switch card (SLI mode to non-SLI mode) and disable the "MultiGPU" function.

Button

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of button.

Clear CMOS Button: SW1

There is a CMOS RAM on board that has a power supply from external battery to keep the system configuration data. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the SW1 (Clear CMOS Button) to clear data. Press the button in the middle of the connector top side to clear the data:

SW1

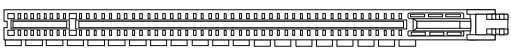
Slots

The mainboard provides two PCI Express x16 slot and three 32-bit PCI bus slots.

PCI Express Slots: PCI_E1 & PCI_E3

The PCI Express slots, as a high-bandwidth, low pin count, serial, interconnect technology, support Intel highest performance desktop platforms utilizing the Intel Pentium 4 processor with HT Technology with these platform benefits. You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics (PDF, 166Kb) infrastructure for Desktop Platforms doubling the capability of existing AGP8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers, while PCI Express x1 supports transfer rate of 250 MB/s.

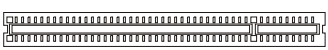


PCI Express x16 slot

PCI (Peripheral Component Interconnect) Slots: PCI1~3

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

The orange PCI slot (PCI3) also works as a communcation slot, which allows you to insert the communcation card.



PCI Slots

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3
PCI Slot 1	INT A#	INT B#	INT C#
PCI Slot 2	INT B#	INT C#	INT D#
PCI Slot 3	INT C#	INT D#	INT A#

3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

MSI Reminds You...

1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

2. While booting up, the BIOS version is shown in the 1st line appearing after the memory counting. It is usually in the format: example: W7100MS V1.0 111803

where:

1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)
2nd - 5th digit refers to the model number.
6th - 7th digit refers to the customer, MS=all standard customers.
V1.0 refers to the BIOS version.
111803 refers to the date this BIOS is released.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Selecting the First Boot Device

You are allowed to select the 1st boot device without entering the BIOS setup utility by pressing <F11>. When the same message as listed above appears on the screen, press <F11> to trigger the boot menu.

The POST messages might pass by too quickly for you to respond in time. If so, restart the system and press <F11> after around 2 or 3 seconds to activate the boot menu similar to the following.

Select First Boot Device		
Floppy	: 1st Floppy	
IDE-0	: IBM-DTLA-307038	
CDROM	: ATAPI CD-ROM DRIVE 40X M	
[Up/Dn] Select	[RETURN] Boot	[ESC] cancel

The boot menu will list all the bootable devices. Select the one you want to boot from by using arrow keys, then press <Enter>. The system will boot from the selected device. The selection will not make changes to the settings in the BIOS setup utility, so next time when you power on the system, it will still use the original first boot device to boot up.

MSI Reminds You...

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F7>	Load BIOS Setup Defaults
<F9>	Load High Performance Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

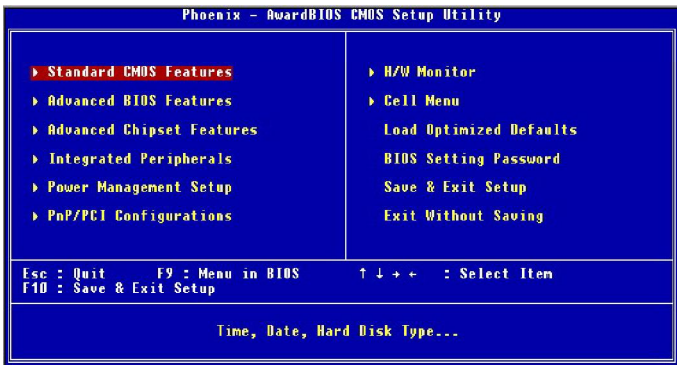
If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Main Menu

Once you enter Phoenix-Award® BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
H/W Monitor
Cell Menu
Load Optimized Defaults
BIOS Setting Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Time, Date, Hard Disk Type...

Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features
Use this menu to setup the items of AWARD® special enhanced features.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PNP/PCI Configurations
This entry appears if your system supports PnP/PCI.

H/W Monitor
This entry shows your PC health status.

Cell Menu
Use this menu to specify your settings for CPU/AGP frequency/voltage control and overclocking.

Load Optimized Defaults
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

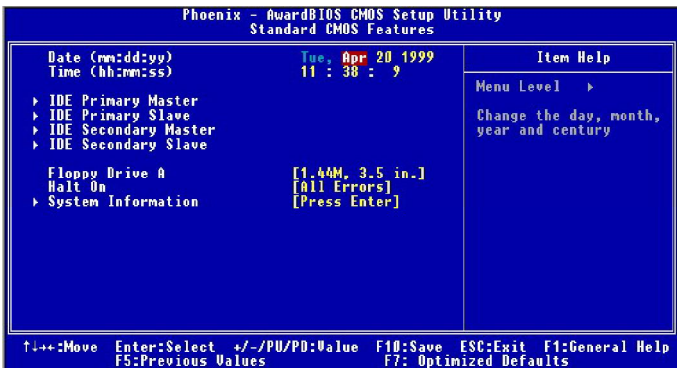
BIOS Setting Password
Use this menu to set the password for BIOS.

Save & Exit Setup
Save changes to CMOS and exit setup.

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu includes some basic setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Tue, Apr 20 1999
Time (hh:mm:ss) 11 : 38 : 9
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Floppy Drive A [1.44M, 3.5 in.]
Halt On [All Errors]
System Information [Press Enter]
Item Help
Menu Level ▸
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Date

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

Time

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

IDE Primary/Secondary Master/Slave
IDE Third/ Fourth/ Fifth/ Sixth Master

Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.

If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

MSI Reminds You...

IDE Third/ Fourth/ Fifth/ Sixth Master *are appearing when you connect the HD devices to the SATA connector on the mainboard.*

Drive A

This item allows you to set the type of floppy drive installed. Available options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in.].

Halt On

The setting determines whether the system will stop if an error is detected at boot. Available options are:

[All Errors]	The system stops when any error is detected.
[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.
[All, But Diskette]	The system doesn't stop for a disk error.
[All, But Disk/Key]	The system doesn't stop for either a disk or a keyboard error.

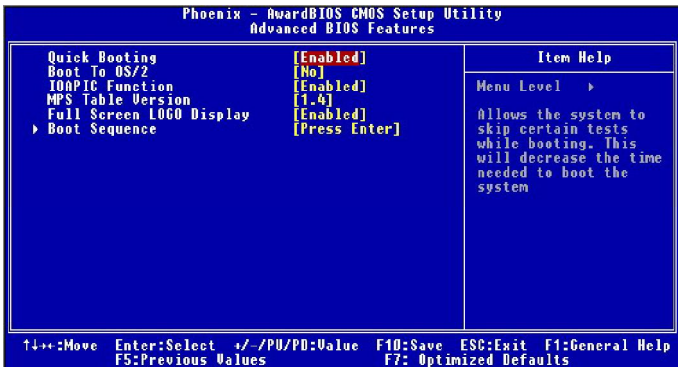
System Information

Press <Enter> to enter the sub-menu and the following screen appears:

CPU Type/BIOS Version/System Memory/Total Memory

The items show the CPU type, BIOS version and memory status of your system (read only).

Advanced BIOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Quick Booting [Enabled]
Boot To OS/2 [No]
IOAPIC Function [Enabled]
MPS Table Version [1.4]
Full Screen LOGO Display [Enabled]
Boot Sequence [Press Enter]
Item Help
Menu Level ▸
Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Quick Boot
Setting the item to [Enabled] allows the system to boot within 5 seconds since it will skip some check items. Available options: [Enabled], [Disabled].

Boot To OS/2
This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose [No], you cannot run the OS/2® operating system with DRAM larger than 64MB. But it is possible if you choose [Yes].

IOAPIC Function
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system. Settings: [Enabled], [Disabled].

MPS Table Version
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: [1.4], [1.1].

Full Screen LOGO Display
This item enables you to show the company logo on the bootup screen. Settings are:

[Enabled]	Shows a still image (logo) on the full screen at boot.
[Disabled]	Shows the POST messages at boot.

Boot Sequence
Press <Enter> to enter the sub-menu and the following screen appears:

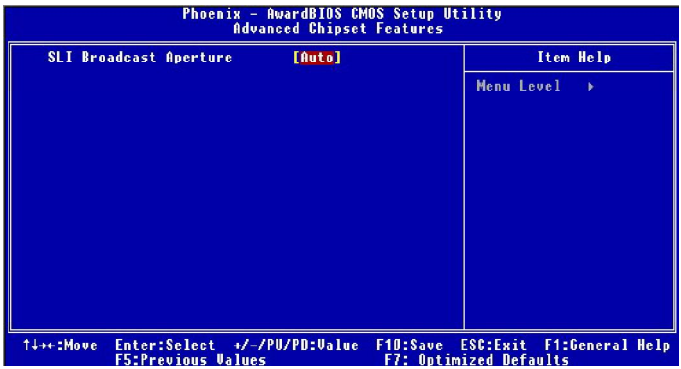
Phoenix - AwardBIOS CMOS Setup Utility
Boot Sequence
1st Boot Device [Floppy]
2nd Boot Device [Hard Disk]
3rd Boot Device [CDROM]
Boot From Other Device [Enabled]
Hard Disk Boot Priority [Press Enter]
Item Help
Menu Level ▸▸
Select Your Boot Device Priority

1st/2nd/3rd Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

Boot Other Device
Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

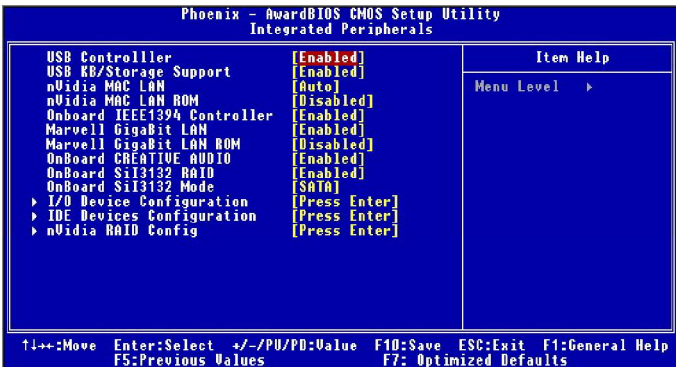
Hard Disk Boot Priority
Press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in this hard disk boot priority list.

Advanced Chipset Features



SLI Broadcast Aperture
Setting options: [Auto], [Disabled].

Integrated Peripherals


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
USB Controlller [Enabled]
USB KB/Storage Support [Enabled]
nVidia MAC LAN [Auto]
nVidia MAC LAN ROM [Disabled]
Onboard IEEE1394 Controller [Enabled]
Marvell GigaBit LAN [Enabled]
Marvell GigaBit LAN ROM [Disabled]
OnBoard CREATIVE AUDIO [Enabled]
OnBoard Sil3132 RAID [Enabled]
OnBoard Sil3132 Mode [SATA]
I/O Device Configuration [Press Enter]
IDE Devices Configuration [Press Enter]
nVidia RAID Config [Press Enter]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

USB Controller
This setting allows you to enable/disable the onboard USB controller. Setting options: [Disabled], [Enabled].

USB KB/Storage Support
Select [Enabled] if you need to use a USB-interfaced keyboard or storage device in the operating system. Setting options: [Enabled], [Disabled].

nVidia MAC LAN
This setting controls the nVidia LAN controller. Setting options: [Auto], [Disabled].

nVidia MAC LAN ROM
This setting is used to enable/disable the nVidia MAC LAN ROM. Setting options: [Enabled], [Disabled].

OnBoard IEEE1394 Controller
This setting is used to enable/disable the onboard IEEE 1394 controller. Setting options: [Disabled], [Enabled].

Marvell GigaBit LAN
This setting controls the Marvell GigaBit LAN controller. Setting options: [Enabled], [Disabled].

Marvell GigaBit LAN ROM
This setting is used to enable/disable the Marvell GigaBit LAN ROM. Setting options: [Enabled], [Disabled].

OnBoard CREATIVE AUDIO
This setting is used to enable/disable the onboard Creative audio. Setting options: [Enabled], [Disabled].

OnBoard Sil3132 RAID
This setting controls the onboard Sil3132 RAID chip. Setting options: [Enabled], [Disabled].

OnBoard Sil3132 Mode
This setting allows you to select the Onboard Sil3132 mode. Setting options: [SATA], [RAID].

I/O Device Configuration
Press <Enter> to enter the sub-menu and the following screen appears:

Onboard FDC Controller
Select [Enabled] if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field. The settings are: [Enabled], [Disabled].

COM Port 1
Select an address and corresponding interrupt for the first serial port. The settings are: [3F8/IRQ4], [2E8/IRQ3], [3E8/IRQ4], [2F8/IRQ3], [Disabled], [Auto].

IR Function Select
This setting allows you to specify the operation mode for serial port 2. Setting options: [IrDA], [ASKIR], [Disable].

[Disable]	RS-232C Serial Port
[IrDA]	IrDA-compliant Serial Infrared Port
[ASKIR]	Amplitude Shift Keyed Infrared Port

RxD, TxD Active
This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: [Hi,Hi], [Hi,Lo], [Lo,Hi], [Lo,Lo].

IR Transmission Delay
This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: [Disabled], [Enabled].

UR2 Duplex Mode
This setting controls the operating mode of IR transmission/reception. Setting options: [Full], [Half]. Under [Full] Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under [Half] Duplex mode, only asynchronous, bi-directional transmission/reception is allowed.

Use IR Pins
Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. Setting options: [RxD2/TxD2], [IR-Rx2Tx2].

Parallel Port
There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

[Disabled]
[3BC/IRQ7] Line Printer port 0
[278/IRQ5] Line Printer port 2
[378/IRQ7] Line Printer port 1

Parallel Port Mode
SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port
ECP + EPP: Extended Capability Port + Enhanced Parallel Port
Normal

EPP Mode Select
The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: “EPP Mode Select.” At this time either [EPP 1.7] spec or [EPP 1.9] spec can be chosen.

ECP Mode Use DMA
The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA.” At this time, the user can choose between DMA channel [3] or [1].

IDE Devices Configuration
Press <Enter> to enter the sub-menu and the following screen appears:

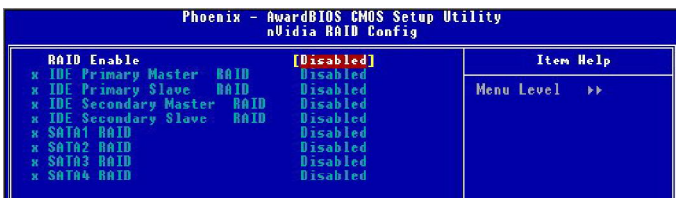
OnChip IDE Channel 0
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose [Enabled] to activate each channel separately. Settings: [Enabled], [Disabled].

OnChip IDE Channel 1
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose [Enabled] to activate each channel separately. Settings: [Enabled], [Disabled].

IDE DMA Transfer Access
This item is used to enable or disable the DMA transfer function of the IDE Hard Drive. The settings are: [Enabled], [Disabled].

SATA1/SATA2 & SATA3/SATA4
This item is used to enable or disable onchip SATA controller. The settings are: [Enabled], [Disabled].

nVidiaRAID Config
Press <Enter> to enter the sub-menu and the following screen appears:

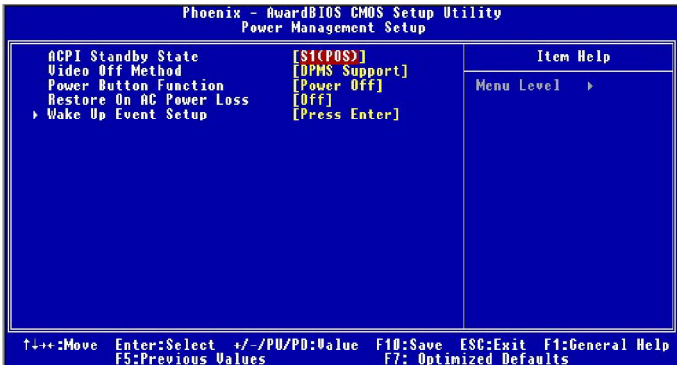

Phoenix - AwardBIOS CMOS Setup Utility
nVidia RAID Config
RAID Enable [Disabled]
x IDE Primary Master RAID Disabled
x IDE Primary Slave RAID Disabled
x IDE Secondary Master RAID Disabled
x IDE Secondary Slave RAID Disabled
x SATA1 RAID Disabled
x SATA2 RAID Disabled
x SATA3 RAID Disabled
x SATA4 RAID Disabled
Item Help
Menu Level ▸▸

RAID Enabled
This item is used to enable/disable the onchip RAID function. When you set to enable and the following fields will be selectabled. Setting options: [Enabled], [Disabled].

IDE Primary/ Secondary Master/Slave RAID
This feature allows users to enable or disable the RAID function for each IDE hard disk drive. Settings: [Enabled], [Disabled].

SATA1/ SATA2/ SATA3/ SATA4 RAID
This feature allows users to enable or disable the RAID function for each onchip SATA hard disk drive. The settings are: [Enabled], [Disabled].

Power Management Setup


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Standby State [S1(POS)]
Video Off Method [DPMS Support]
Power Button Function [Power Off]
Restore On AC Power Loss [Off]
Wake Up Event Setup [Press Enter]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

MSI Reminds You...

S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.

ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME, Windows 2000, and Windows XP, you can choose to enter the Standby mode in S1(POS) or S3(STR) fashion through the setting of this field. Options are:

[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3 (STR)] The S3 sleep mode is a lower power state where the in formation of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.

Video Off Method

This determines the manner in which the monitor is blanked.

[V/H SYNC+Blank] This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

[Blank Screen] This option only writes blanks to the video buffer.

[DPMS Support] Initial display power management signalling.

Power Button Function
This feature sets the function of the power button. Settings are:

[Power Off]	The power button functions as normal power off button.
[Suspend]	When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

Restore On AC Power Loss
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Off]	Always leaves the computer in the power off state.
[On]	Always leaves the computer in the power on state.
[Last State]	Restores the system to the status before power failure or interrupt occurred.

Wake-Up Event Activity
Press <Enter> and the following sub-menu appears.

Phoenix - AwardBIOS CMOS Setup Utility
Wake Up Event Setup
Resume S3 by PS2/Keyboard [Disabled]
Resume S3 by PS2/Mouse [Disabled]
Resume By PCI Device PME# [Disabled]
Resume By RTC Alarm [Disabled]
x Date 0
x HH:MM:SS 10 : 0 : 0
Item Help
Menu Level ▸▸

Resume S3 by PS2/Keyboard, Resume S3 by PS2/Mouse
These fields allow the activity of the PS2 (keyboard and mouse) to wake up the system from S3 sleep state. Settings: [Enabled], [Disabled].

Resume By PCI Device PME#
When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PME (Power Management Event). Settings: [Enabled], [Disabled].

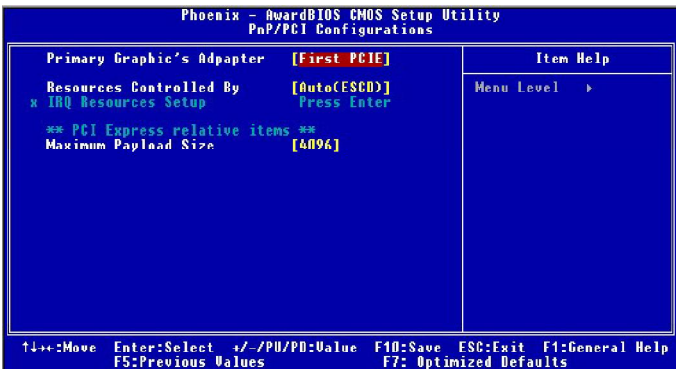
Resume By RTC Alarm
The field is used to enable or disable the feature of booting up the system on a scheduled time/date. Settings: [Enabled], [Disabled].

Date
The field specifies the date for ***Resume By RTC Alarm***. Settings: [0]~[31].

HH:MM:SS
The field specifies the time for ***Resume By RTC Alarm***. Format is <hour> <minute><second>.

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Primary Graphic's Adpapter [First PCIE]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Setup Press Enter
** PCI Express relative items **
Maximum Payload Size [4096]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Primary Graphic's Adapter
This item specifies which graphic card is your primary graphics adapter. Settings: [First PCIE], [PCI Slot].

Resource Controlled By
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95/98. If you set this field to [Manual], choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "}"). The settings are: [Auto (ESCD)], [Manual].

IRQ Resources
The items are adjustable only when ***Resources Controlled By*** is set to [Manual]. Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

[PCI Device]	For Plug & Play compatible devices designed for PCI bus architecture.
[Reserved]	The IRQ will be reserved for further request.

**** PCI Express relative items ****

Maximum Payload Size

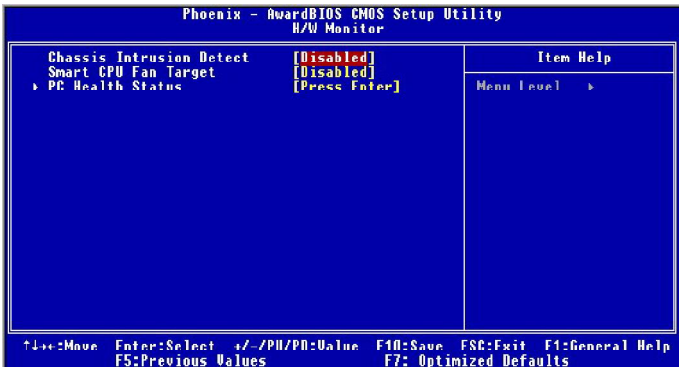
This item allows you to set the PCI Express Maximum payload size per time . Settings: [4096], [128], [256], [512], [1024], [2048].

MSI Reminds You...

IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.

H/W Monitor

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



Chassis Intrusion Detect

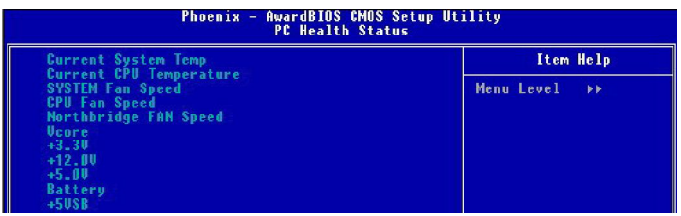
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Setting options: [Enabled], [Reset], [Disabled].

Smart CPU Fan Target

There are 2 pairs of Temperature/FAN Speed control: System Temperature with System Fan, and CPU Temperature with CPU Fan. W83627THF provides the Smart Fan system which can control the fan speed automatically depending on the current temperature to keep it with in a specific range. Settings: [40ºC/104ºF], [40ºC/104ºF], [40ºC/104ºF], [Disabled].

PC Health Status

Press <Enter> and the following sub-menu appears.

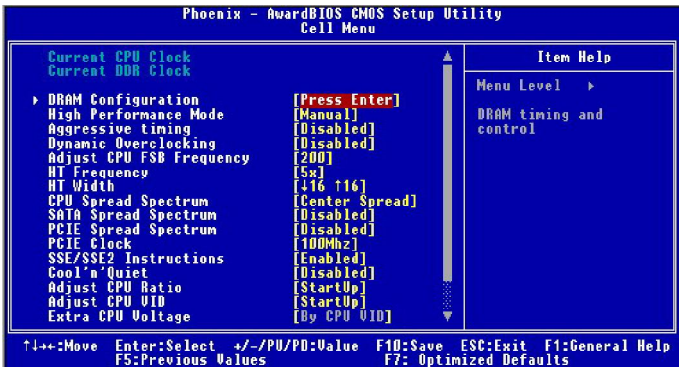


Current System/CPU Temperature, System Fan/CPU Fan Speed, Vcore, +12.0V, +3.3V, +5.0V, Battery, +5VSB

These items display the current status of all of the monitored hardware devices/components such as CPU voltage, temperatures and all fans' speeds.

Cell Menu

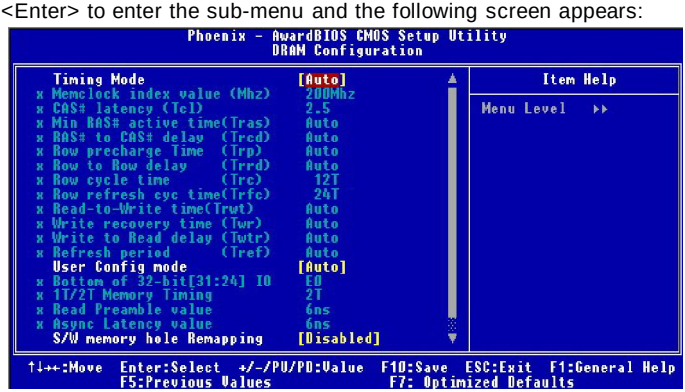
The items in Cell Menu includes some important settings of CPU, AGP, DRAM and overclocking functions.



MSI Reminds You...
Change these settings only if you are familiar with the chipset.

Current CPU / DDR Clock
These two items show the current clocks of CPU & DDR. Read-only.

DRAM Configuration
Press <Enter> to enter the sub-menu and the following screen appears:


Phoenix - AwardBIOS CMOS Setup Utility
DRAM Configuration
Timing Mode [Auto]
x Memclock index value (Mhz) 200Mhz
x CAS# latency (Tcl) 2.5
x Min RAS# active time(Tras) Auto
x RAS# to CAS# delay (Trcd) Auto
x Row precharge Time (Trp) Auto
x Row to Row delay (Trrd) Auto
x Row cycle time (Trc) 12T
x Row refresh cyc time(Trfc) 24T
x Read-to-Write time(Trwt) Auto
x Write recovery time (Twr) Auto
x Write to Read delay (Twtr) Auto
x Refresh period (Tref) Auto
User Config mode [Auto]
x Bottom of 32-bit[31:24] IO E0
x 1T/2T Memory Timing 2T
x Read Preamble value 6ns
x Async Latency value 6ns
S/W memory hole Remapping [Disabled]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Timing Mode
This field has the capacity to automatically detect all of the DRAM timing. If you set this field to [Manual], the following fields will be selectable. The settings are: [Auto], [Manual].

Memclock index value (Mhz)
When it is set to *Manual* in "Timing Mode", user can place an artificial memory clock on the system. Please note that memory is prevented from running faster than this frequency. Setting options: [100], [133], [166], [200].

CAS# Latency (Tcl)
When the ***Timing Mode*** is set to [Manual], the field is adjustable.This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: [Auto], [CL=2.0], [CL=2.5], [CL=3.0]. [CL=2.0] increases the system performance the most while [CL=3.0] provides the most stable performance.

Min RAS# Active Time (Tras)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. This setting determines the time RAS takes to read from and write to a memory cell. Setting options: [Auto], [5T], [6T], [7T], [8T], [9T], [10T], [11T], [12T], [13T], [14T], [15 T].

RAS# to CAS# delay (Trcd)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: [Auto], [2T], [3T], [4T], [5T], [6T], [7T].

Row Precharge Time (Trp)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: [Auto], [2T], [3T], [4T], [5T], [6T], [7T].

Row to Row delay (Trrd)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. Specifies the active-to-active delay of different banks. Available settings: [Auto], [2T], [3T], [4T].

Row cycle time (Trc)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. The row cycle time determines the minimum number of clock cycles a memory row takes to complete a full cycle, from row activation up to the precharging of the active row. Available settings: [Auto], [2T], [3T], [4T].

Row refresh cyc time (Trfc)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. Auto-refresh -active to RAS#-active or RAS# auto-refresh. Available settings: [Auto], [9T], [10T] ~ [24T].

Read to Write delay (Trwt)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. This is not a DRAM-specified timing parameter, but must be considered due to routing latencies on the clock forwarded bus. It is counted from the first address bus slot that was not associated with part of the read burst. Available settings: [Auto], [1T], [2T], [3T], [4T], [5T], [6T].

Write recovery time (Twr)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. It specifies the amount of delay (in clock cycles) that must elapse after the completion of a valid write operation, before an active bank can be precharged. This delay is required to guarantee that data in the write buffers can be written to the memory cells before precharge occurs. Available settings: [Auto], [2T], [3T].

Write to Read delay (Twtr)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. This item controls the Write Data In to Read Command Delay memory timing. This constitutes the minimum number of clock cycles that must occur between the last valid write operation and the next read command to the same internal bank of the DDR device. Available settings: [Auto], [1T], [2T].

Refresh period (Tref)
When the ***Timing Mode*** is set to [Manual], the field is adjustable. Specifies the refresh rate of the DIMM requiring the most frequent refresh. Available settings: [Auto], [1x1552], [1x2064], [1x2592], [1x3120], [1x3632], [1x4128], [1x4672], [2x1552], [2x2064], [2x2592], [2x3120], [2x3632], [2x4128], [2x4672], [4x1552], [4x2064], [4x2592], [4x3120], [4x3632], [4x4128], [4x4672], [128].

User Config mode
This field has the capacity to automatically detect all of the following 4 fields default value.. If you set this field to [Manual], the following fields will be selectable. The settings are: [Auto], [Manual].

Bottom of 32-bit [31:24] IO
When the ***User Config mode*** is set to [Manual], the field is adjustable. This field specifies the memory which could be remapped to another address higher than 00E0. (This item only activities in 64-bit OS) The settings are: [0000~00E0].

1T/ 2T Memory Timing
When the ***User Config mode*** is set to [Manual], the field is adjustable. This field controls the SDRAM command rate. Selecting [1T] makes SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting [2T] makes SDRAM signal controller run at 2T rate. Setting options: [1T], [2T].

Read Preamble value
When the ***User Config mode*** is set to [Manual], the field is adjustable. The time prior to the max-read DQS-return when the DQS receiver should be turned on.

This is specified in units of 0.5ns. The controller needs to know when to enbale its DQS receiver in anticipation of the DRAM DQS driver truning on for a read. The controller will disable its DQS receiver until the read preamble time and then enable its DQS receiver while the DRAM asserts DQS. Setting options: [2ns], [2. 5ns], [3ns], [3.5ns], [4ns], [4.5ns], [5ns], [5.5ns], [6ns], [6.5ns], [7ns], [7.5ns], [8ns], [8.5ns], [9ns], [9.5ns].

Async Latency value
When the ***User Config mode*** is set to [Manual], the field is adjustable. This field should be loaded with 4-bit value equal to th e maximum asynchronous latency in the DRAM read round-trip loop. Setting options: [2ns], [3ns], [4ns], [5ns], [6ns], [7ns], [8ns], [9ns], [10ns], [11ns].

S/W & H/W memory hole Remapping
This field enables software/hardware to remap the physical memory to the address higher than 00E0. (This item only activities in 64-bit OS) Setting options: [Disabled], [Enabled].

MTRR Mapping Mode
This field allows you to control the MTRR mapping Mode. Setting options: [Disabled], [Continuous].

Aggressive timing
This item allows you to enable or disable the memory clock. When [Enabled] is selected, the timing delay of memory will be shorten to increase the performance. Setting options: [Enabled], [Disabled].

Dynamic Overclocking
Dynamic Overclocking Technology is the automatic overclocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance. Setting options:

[Disabled]	Disable Dynamic Overclocking function.
[Private]	1st level of overclocking, increasing the CPU frequency by 1%.
[Sergeant]	2nd level of overclocking, increasing the CPU frequency by 3%.
[Captain]	3rd level of overclocking, also the default value of "Load High Performance Defaults", increasing the CPU frequency by 5%.
[Colonel]	4th level of overclocking, increasing the CPU frequency by 7%.
[General]	5th level of overclocking, increasing the CPU frequency by 9%.
[Commander]	6th level of overclocking, increasing the CPU frequency by 11%.

MSI Reminds You...
Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest user to make sure that your CPU can afford to overclocking regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to disable the Dynamic Overclocking or to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, you also need to disable the ***D.O.T Ranger*** *first.*

Adjust CPU FSB Frequency
This item allows you to select the CPU Front Side Bus clock frequency (in MHz). Select the number between [200]~[400] for needed frequency.

HT Frequency
This setting specifies the maximum operating frequency of the link's transmitter clock. Setting options: [1x], [1.5x], [2x], [2.5x], [3x], [4x], [5x].

HT Width
This field allows you to set the HT Width between CPU & Chip.↑ mark means Chip to CPU HT Width. And ↓ mark means CPU to Chip HT Width. Setting options: [↓8 ↑8], [↓16 ↑8], [↓8 ↑16], [↓16 ↑16].

CPU Spread Spectrum
This setting is used to enable or disable the CPU Spread Spectrum feature. When overclocking the CPU, always set it to [Disabled]. Setting options: [Center Spread], [Disabled].

SATA Spread Spectrum
This setting is used to enable or disable the SATA Spread Spectrum feature. Setting options: [Disabled], [Down Spread].

PCIE Spread Spectrum
This setting is used to enable or disable the PCIE Spread Spectrum feature. Setting options: [Disabled], [Down Spread].

PCIE Clock
This item allows you to select the PCIE Bus clock frequency (in MHz). Select the number between [100]~[145] for needed frequency.

SSE/ SSE2 Instructions
This setting disables/enables the SSE/SSE2 Instructions. The Streaming SIMD Extensions (SSE) were introduced in the Pentium III processor. The SSE extensions consist of a new set of instructions and a new set of registers. These instructions and registers are designed to allow Single-Instruction Multiple-Data (SIMD) computations to be made on single-precision floating-point numbers.
The Streaming SIMD Extensions 2 (SSE2) were introduced in the Pentium 4 and Intel

Xeon processors. They consist of a new set of instructions that operate on the XXM and MXCSR registers and perform SIMD operations on double-precision floating-point values and on integer values.Several of these new SSE/SSE2 instructions also operate in the MMX registers. Setting options: [Enabled], [Disabled].

Cool'n'Quiet control
This feature is especially designed for AMD Athlon processor, which provides a CPU temperature detecting function to prevent your CPU's from overheating due to the heavy working loading. Setting options: [Disabled], [Auto].

MSI Reminds You...
For the purpose of ensuring the stability of Cool'n'Quiet function, it is always recommended to have the memories plugged in DIMM1.

Adjust CPU Ratio
This item lets you adjust the CPU ratio. Setting to [Startup] enables the CPU running at the fastest speed which is detected by system. Setting options are: [Startup], [x4]~[x25].

Adjust CPU VID
This item lets you adjust the CPU VID. Setting to [Startup] enables the CPU running at the default VID which is detected by system. Setting options are: [Startup], [0.825V], [0.850V],[0.875V],~, [1.550V].

CPU Voltage
This feature allows you to trim the voltage of CPU.

Memory Voltage
Adjusting the DDR voltage can increase the DDR speed. Any changes made to this setting may cause a stability issue, so ***changing the DDR voltage for long-term purpose is NOT recommended***.

NF4 Voltage
NF4 voltage is adjustable in the field.

MSI Reminds You...
*The settings shown in different color in **CPU Voltage**, **Memory Voltage** and **NF4 Voltage** help to verify if your setting is proper for your system.*
Gray: ***Default setting.***
Yellow: ***High performance setting.***
Red: ***Not recommended setting and the system may be unstable.***
*Changing **CPU Voltage, Memory Voltage** and **NF4 Voltage** may result in the instability of the system; therefore, it is **NOT** recommended to change the default setting for long-term usage.*

Load Fail-Safe/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:

Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

When you select Load Optimized Defaults, a message as below appears:

Pressing *Y* loads the default factory settings for optimal system performance.

BIOS Setting Password

When you select this function, a message as below will appear on the screen:

Type the password, up to six characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Introduction to DigiCell

DigiCell, the most useful and powerful utility that MSI has spent much research and efforts to develop, helps users to monitor and configure all the integrated peripherals of the system, such as audio program, power management, MP3 files management and communication / 802.11g WLAN settings. Moreover, with this unique utility, you will be able to activate the MSI well-known features, Live Update and Core Center, which makes it easier to update the BIOS/drivers online, and to monitor the system hardware status (CPU/Fan temperature and speed) or to overclock the CPU/ memory.

Once you have your DigiCell installed (locate the setup source file in the setup CD accompanying with your mainboard, path: **Utility --> MSI Utility --> MSI DigiCell**), it will have an icon in the system tray, a short cut icon on the desktop, and a short cut path in your “Start-up” menu. You may double-click on each icon to enable DigiCell.

short-cut icon in the system tray

short-cut path in the start-up menu
(path: Start-->Programs-->MSI-->DigiCell)

Main

Before using this utility, it is required to have all the integrated peripherals/cards (LAN card, Wireless LAN card, MegaStick... etc.) and all the necessary drivers (onboard LAN driver, audio driver, CoreCenter, Live Update... etc.) installed correctly.

The icon representing each item will be lit up if it is inserted/installed correctly and properly. Otherwise, the icon will remain gray and user is not able to view the functionality/connection of that item.

Introduction:

Click on each icon appearing above to enter the sub-menu to make further configuration.

MSI

Click on this button to link to MSI website: http://www.msi.com.tw.

Quick Guide

Click on this button and the quick guide of **DigiCell** will be displayed for you to review.

H/W Diagnostic

In this sub-menu, it provides the information of each DigiCell button for you to check if the representing peripherals/cards/drivers are correctly installed.

Comm.

In this sub-menu, you can see the configuration details for communication products, including the status, strength, speed and channel of the connection of the Ethernet LAN & Wireless LAN.

Software Access Point

In this sub-menu, you can change your connection mode to different ones, and configure the advanced settings for each mode, such as the authentication encryption... etc.

Live Update
You can take advantage of **Live Update** to detect and update BIOS and drivers online.

Core Center
You can take advantage of **Core Center** to monitor the health status of your system and to overclock under Windows OS if your system supports overclocking function.

MEGA STICK
If you have your MEGA STICK connected to your system, this icon will be lit up. Click this blue icon to turn DigiCell into a MP3 player, and then you can load media files from your MEGA STICK or the system, and edit the preferred playlist.

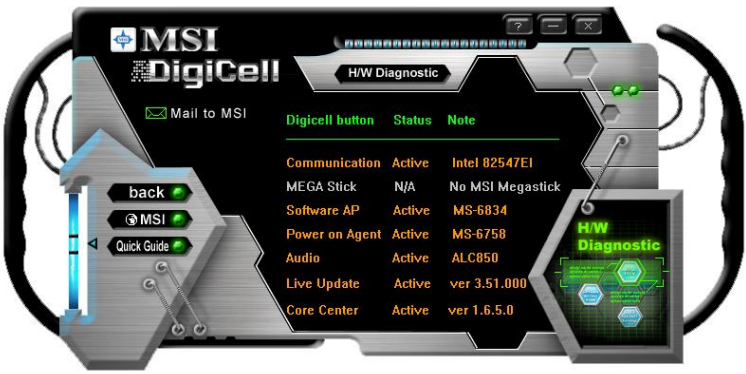
Audio Speaker Setting
In this sub-menu, you can configure and test the multi-channel audio function, speakers, sound effect and environment.

Power on Agent
In this sub-menu, you can configure date, time and auto-executed programs of the power-on, power-off and restarting features.

MSI Reminds You...
*Click on **back** button in every sub-menu and it will bring you back to the main menu.*

H/W Diagnostic

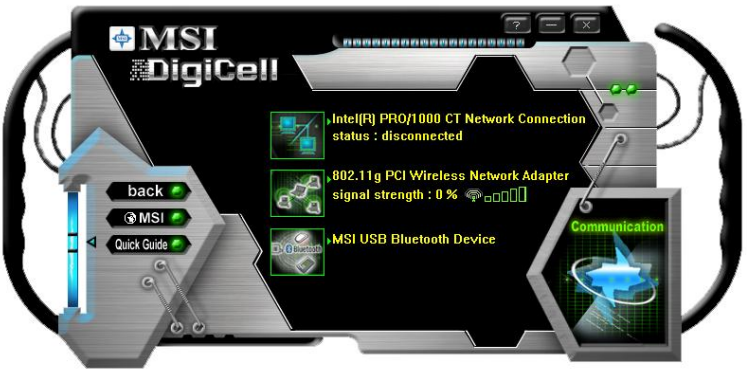
In the **H/W Diagnostic** sub-menu, you can see the information, status and note of each DigiCell. You may double check the connection and installation of the item marked as gray.



You may also click on the **Mail to MSI** button to send your questions or suggestions to MSI's technical support staff.

Communication

In the **Communication** sub-menu, you can see the status of all the LAN / WLAN / Bluetooth on the screen if the hardware is installed. The first icon indicates the onboard LAN on your system, the second icon indicates the wireless LAN status, and the third one is the information about the bluetooth on your system. Click on each item for details.



This icon indicates the information and connection status of onboard LAN, which is read-only.

The second icon indicates the wireless connection. You may click this icon to configure the advanced settings in the **WLAN Card Mode** dialogue box (see the image on p.4-8). Please note that it is only available when the **Software Access Point** is set to **WLAN Card Mode**.

The third icon indicates the connection using bluetooth devices. If your system has connected to the bluetooth device, the icon will light up.

Software Access Point

In the **Software Access Point** sub-menu, you can see the status of communicating on your system and choose the desired software access point mode by clicking on the desired icon, in which the default settings are configured for your usage. The default software access point mode is set to **WLAN Card Mode**. For more advanced security settings and channels switching, click on **"Setting"** button to enter its sub-menu.

Terminology

Here are the introduction of WLAN / AP communication terminology.

WEP Key

In the wireless network environment, the administrator can set up password (Network Key) to protect the network from being attacked or unauthorized access. When building the network, you can set up 4 sets of WEP keys, which can be 5 characters (10 hex-adecimal digital) or 13 characters (26 hex-adecimal digital) and specify one of them to use.

Ad-hoc Mode

An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.

Infrastructure Mode

The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.

Access Point Mode

Click on **"Setting"** button of the **Access Point Mode** and the following screen will display.

IP Sharing

Click on this icon to enable/disable the IP sharing. The default of this setting is disabled.

Disabled.

Enabled.

Enabling/disabling IP sharing depends on the different situation. For example:

1. If your family and you are getting on Internet at home with multi computers, and your ISP only provides one IP for you, you may need to enable **IP Sharing** function in order to use this one IP to get on Internet with multi computers simultaneously.
2. If you are getting on Internet in office, usually the LAN card will automatically get the IP this computer uses. In this case you don't have to enable this function.

SSID

Means Service Set Identifier, a ***unique*** name shared among all points in a wireless network. It must be ***identical*** for all points in the network. Then the card will be able to connect to an access point with the same SSID.

Channel

Specifies the operating radio frequency channel in **Infrastructure mode**, which should be set to an available one (ex: with less traffic to ensure the stable and better connection).

Associated Client List

This option is to display information of stations that are currently associated to your wireless gateway.

Association Control

This option allows you to control which PC can connect to the wireless LAN. If you

enable this feature, only PCs with MAC address located in Association Control List can connect to the wireless LAN.

MAC Address
MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network.

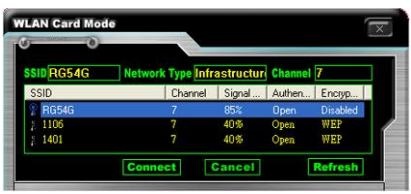
Security
This option allows you to enable/disable the authentication function.

Authentication
Open: Communicates the key across the network.
Shared: Devices must have identical WEP settings to communicate.

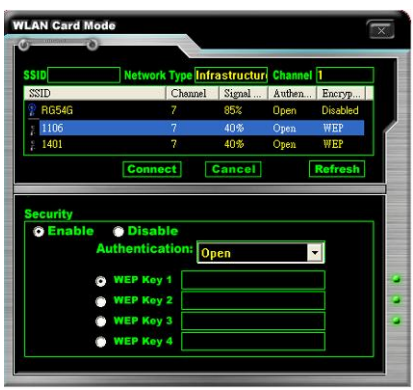
WLAN Card Mode

Click on **"Setting"** button of the **WLAN Card Mode** for the WEP status of your APs.

If the AP you are selecting (the highlighted one) is not encrypted (***Disabled*** shown in the **Encryption** column), the screen will display as below. You can click "**Connect**" to make connection to that AP, click "**Cancel**" to close this dialogue box, or click **"Refresh"** button to update the available WLAN connections.



If the network you are selecting is encrypted (***WEP*** shown in the **Encryption** column), the screen will display as below. You need to enter the correct WEP key defined by AP in the specified **WEP Key 1~4** fields to make the connection.

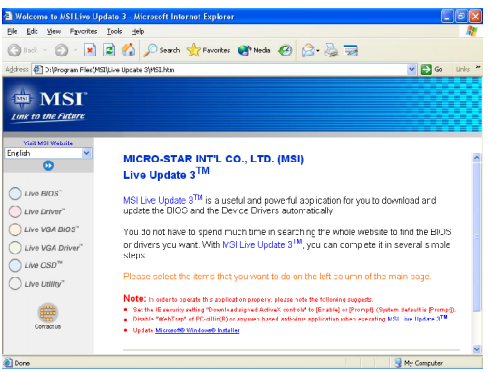


Live Update

Click on the **Live Update** icon in the main menu and the **Live Update** program will be enabled.

The Live Update 3™ is a tool used to detect and update your BIOS/drivers/VGA BIOS/VGA Driver/OSD/Utility online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the "MSI Live Update 3" application. After the installation, the "MSI Live Update 3" icon (as shown on the right) will appear on the screen.

Double click the "MSI Live Update 3" icon, and the following screen will appear:



Five buttons are placed on the left column of the screen. Click the desired button to start the update process.

Live BIOS – Updates the BIOS online.
Live Driver – Updates the drivers online.
Live VGA BIOS – Updates the VGA BIOS online.
Live VGA Driver – Updates the VGA driver online.
Live OSD – Updates the firmware of the OSD products online.
Live Utility – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a "sorry" message is displayed. For more information on the update instructions, insert the companion CD and refer to the "Live Update Guide" under the "Manual" Tab.

MEGA STICK

In the **MEGA STICK** sub-menu, you can configure the settings of MSI MEGA STICK and the media files (*.m3u, *.mp3, *.wav, *.cda, *.wma) on your system.

Basic Function

Here you can edit your own play list with the buttons **"load", "save", "delete", "shuffle", "repeat"** & **"print".**

Load To load media files or the playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.

Save To save a loaded playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.

Delete Click on the media files in the **Play List:** field and use **"Delete"** button to remove the media file from the play list. You may remove multi media files simultaneously by using "Ctrl" to select multi files.

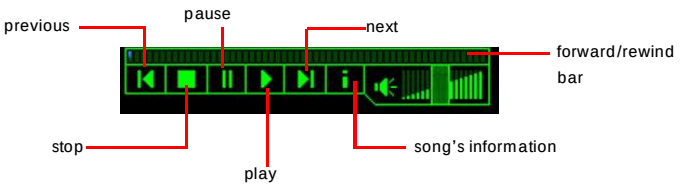
Shuffle To play the media file in the **Play List:** in a random order.

Repeat To repeat the selected files in the **Play List:**.

Print This button has 2 functions:

1. To print out the details of current play list through your printer with the following information:
   Song title --- Song length --- Singer name
2. To save the details of current play list and save the file in the plain text file format in the *Program files**MSI**DigiCell**MyMusic.txt* for your reference. The *MyMusic.txt* file is with the following information:
   Song title --- Song length --- Singer name

There is also a toolbar for you to execute some basic function, like play, stop, pause, previous/next song, song info and volume adjust. There is also a scroll bar on the top for you to forward/rewind.



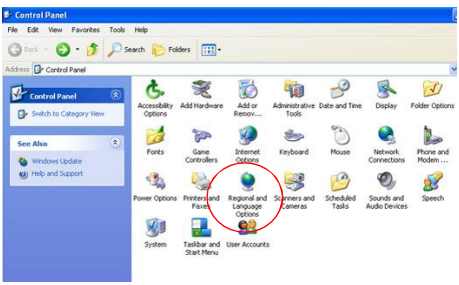
Right-click on the MP3 file and choose **"Info"**, a **MP3 Info** dialogue will pop up to show the information of the file, including the title, artist, album, release year and others. You may also add your own comment in the **comment** field. Then click **"Save"** to save the change, click **"Cancel"** to discard the change, or click **"Remove"** to all this information.

Non-Unicode programs supported

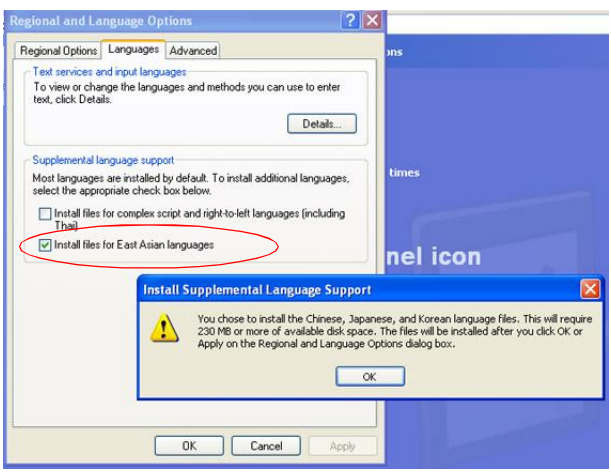
If you are using an operating system in European languages, and you'd like to play the media files in MEGA STICK with East-Asian languages (such as Chinese, Japanese... etc.), it is possible that the file names display incorrectly.

However, you can install the ***Supplemental Language Support*** provided by Microsoft to solve this problem. You need to have your Microsoft Setup CD prepared in the CD-ROM. The system will start to install the necessary components after the settings are configured here. Follow the steps described below.

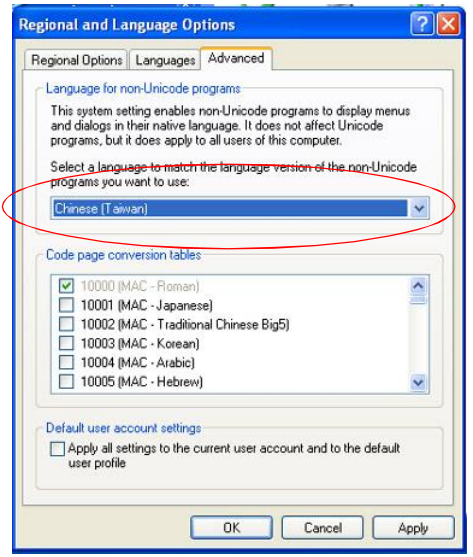
1. Go to [Control Panel] and choose [Regional and Languages Options].



2. Go to the [Languages] tab and enable the check box of [Install files for East Asian languages]. A dialogue box will pop up to remind you the above selection is chosen.


Regional and Language Options
Regional Options
Languages
Advanced
Text services and input languages
To view or change the languages and methods you can use to enter text, click Details.
Details...
Supplemental language support
Most languages are installed by default. To install additional languages, select the appropriate check box below.
Install files for complex script and right-to-left languages (including Thai)
Install files for East Asian languages
OK
Cancel
Apply
Install Supplemental Language Support
You chose to install the Chinese, Japanese, and Korean language files. This will require 230 MB or more of available disk space. The files will be installed after you click OK or Apply on the Regional and Language Options dialog box.
OK

3. Then go to the [Advanced] tab and select ***the language you want to be supported*** (the language of the filename in the MegaStick) from the drop-down list in the [Language for non-Unicode programs], then click [Apply]. The system will install the necessary components from your Microsoft Setup CD immediately.


Regional and Language Options
Regional Options
Languages
Advanced
Language for non-Unicode programs
This system setting enables non-Unicode programs to display menus and dialogs in their native language. It does not affect Unicode programs, but it does apply to all users of this computer.
Select a language to match the language version of the non-Unicode programs you want to use:
Chinese (Taiwan)
Code page conversion tables
10000 (MAC - Roman)
10001 (MAC - Japanese)
10002 (MAC - Traditional Chinese Big5)
10003 (MAC - Korean)
10004 (MAC - Arabic)
10005 (MAC - Hebrew)
Default user account settings
Apply all settings to the current user account and to the default user profile
OK
Cancel
Apply

Core Center (for AMD Processor)

Click on the **Core Center** icon in the main menu and the **Core Center** program will be enabled.

Cool'n'Quiet

This utility provides a CPU temperature detection function called ***Cool'n'Quiet***. ***Cool'n'Quiet*** is a special feature designed only for AMD® Athlon64 processor, and with ***Cool'n'Quiet***, the system will be capable of detecting the temperature of the CPU according to the CPU's working loading. When the CPU temperature climbs up to a certain degree, the speed of the system cooling fan will be risen automatically, and on the other hand, the speed of the system cooling fan will slow down instantly when the CPU temperature descends to its normal degree.

Here the current system status (including Vcore, 3.3V, +5V and 12V) and the current PC hardware status (such as the CPU & system temperatures and all fans speeds) are shown on the left and right sides for you to monitor.

When you click the red triangles in the left and right sides, two sub-menus will open for users to overclock, overspec or to adjust the thresholds of system to send out the warning messages.

Left-side: Current system status

In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button in front of each item and make it available (the radio button will be lighted as yellow when selected), use the "**+**" and "**-**" buttons to adjust, then click **"OK"** to apply the changes. Then you can click **"Save"** to save the desired FSB you just configured.

Also you may click **"Auto"** to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click **"Default"** to restore the default values.

Right-side: PC hardware status during real time operation

In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click "**OK**" to apply the changes. The values you set for the temperatures are the maximum thresholds for the system for warnings, and the values for fan speeds are the minimum thresholds.

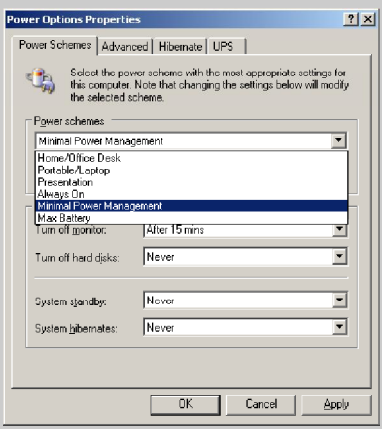
Center-side: User mode/Auto mode

Here you may adjust the CPU fan speed. If you choose ***User mode***, you may adjust the CPU fan speed in 8 different modes, from **High Speed** to **Low speed**. If you choose ***Cool'n'Quiet***, the system will automatically configure an optimal setting for you.

MSI Reminds You...

To ensure that Cool'n'Quiet function is activated and will be working properly, it is required to double confirm that:

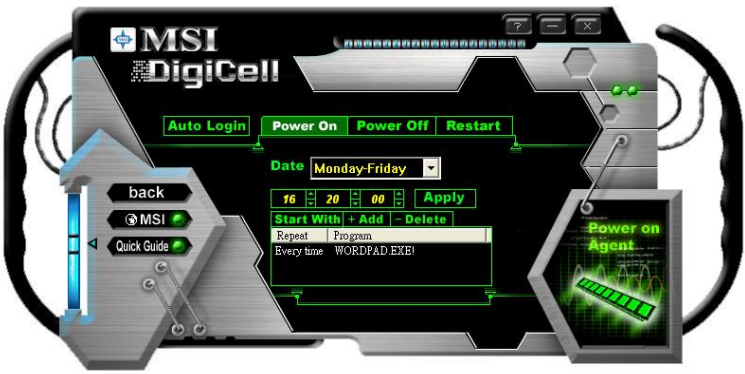
1. *Check the serial number printed on the top of CPU. On the top of CPU, there are three lines listed under AMD Athlon™. Find the 13 characters of the first line, and locate the last one from those 13 characters. If the last character is "O" or after "O" (such as P, Q, R, and so on), that means this CPU supports Cool'n'Quiet function. On the contrary, if the last character is before "O", that means this CPU does not support Cool'n'Quiet function.*
2. *Run BIOS Setup, and select **Frequency/Voltage Control**. Under **Frequency/Voltage Control**, find **Cool'n'Quiet Support**, and set this item to "Enable."*
3. *Enter Windows, and select [Start]->[Settings]->[Control Pannel]->[Power Options]. Enter **Power Options Properties** tag, and select **Minimal Power Management** under **Power schemes**.*



Power on Agent

In the **Power on Agent** sub-menu, you can configure setting of power-on, power-off and restarting status.

In the screen below, you can set the date, time, start-up programs respectively for power-on, power-off and restarting.



Power On

Here are the available settings for **Power On** function:

Date Use the drop-down list to select the date for power-on.

Time Use the arrow keys to select the hour/minute/second for power-on, power-off and restarting. Then click **"Apply"** to save the changes. As you click **"Apply"**, the following dialogue will appear to show you the next power-on schedule, and the system will start to count down to restart. Click **"OK"** to restart the computer right away or click **"Later"** to restart your computer later.

MSI Reminds You...

Please note that the new setting will not take effect until you restart your computer.

Power Off / Restart

You may configure the time (in the format hh:mm:ss) for the next power-off / restart.

Start With

Use the button **"+Add"** to add the start-up programs as DigiCell is activated next time. For example, you may like to have Outlook activated or a specified website linked when you get to the office every morning.

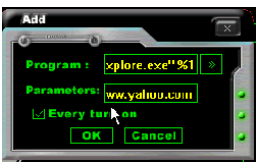
Step 1: Click on the **Program:** field and click **">>"** button to browse for the path of Outlook or Internet Explorer.

Step 2: Click on **"OK"** to apply the setting.

Step 3: For specified file or specified website, you may enter the file name with the complete path or the website link in the **Parameters:** field.

add the desired start-with program

To activate Outlook as DigiCell is enabled next time



To activate a specified website as DigiCell is enabled next time

Of course you may use the button **"-Delete"** to remove the added programs, or you can right-click on the selected program and click **Delete**.

delete the added program

MSI Reminds You...

*You can also enable the **Every turn on** function, which will enable the specified program(s) and file(s) every time the Digi Cell utility runs.*

Auto Login

Since the **Power On** function allows the system to power on automatically, you may have to enable this **Auto Login** function in the following situations:

1. If you are using a computer belonging to a domain in office, and you need to enter your user name & password everytime when you boot up your computer.
2. If there are multi users using the same computer and you'd like to power on the computer automatically with one specific user.

Enable Auto Login

Enable this setting if you want to use the **Auto Login** feature. It supports the following operating systems: Win9X, Windows ME, Windows 2000 & Windows XP.

Default User Name

It is only available for Windows 2000 & Windows XP.

-- If you are using a computer belonging to a domain in office, please enter your login user name in this field.

-- If you are using a computer with multi users (for Windows XP operating system), please enter the user name you'd like to auto power-on in this field.

Default Password

It is only available for Windows 2000 & Windows XP.

-- If you are using a computer belonging to a domain in office, please enter your login password in this field.

-- If you are using a computer with multi-users (for Windows XP operating system), please enter the password for the user name you'd like to auto power-on in this field.

Introduction to Creative Sound Blaster

The mainboard is equipped with Creative CA0106 chip. Creative CA0106 supports up to 8-channel & SPDIF audio effect and allows the board to attach 2, 4, 6 or 8 speakers for better surround sound effect. The section will tell you how to install and use 2-, 4-, 6- or 8-channel audio function on the board.

Using 2-, 4-, 6- & 8- Channel Audio Function

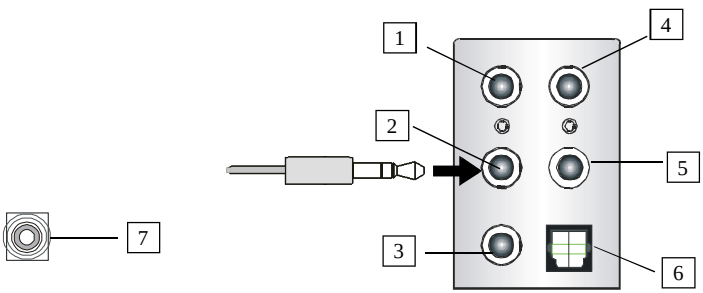
Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.

n 2-Channel Mode for Stereo-Speaker Output

Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

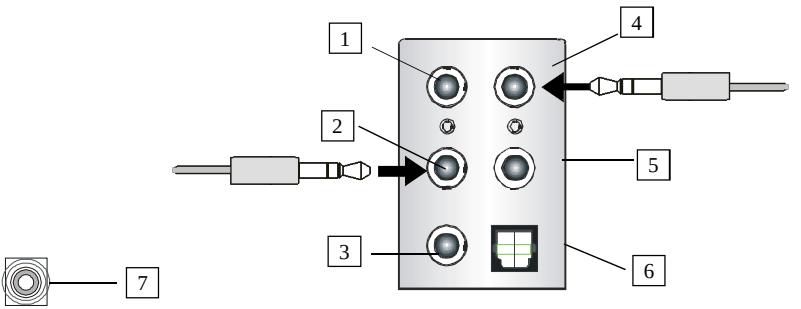
Back Panel



1 Line In/ Side Surround Out *(Side channels, but not function on this mode)*
2 Line Out *(Front channels)*
3 MIC
4 Line Out *(Rear channels, but no functioning in this mode)*
5 Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6 *S/PDIF Out-Optical*
7 *S/PDIF Out-Coaxial*

n 4-Channel Mode for 4-Speaker Output

Back Panel

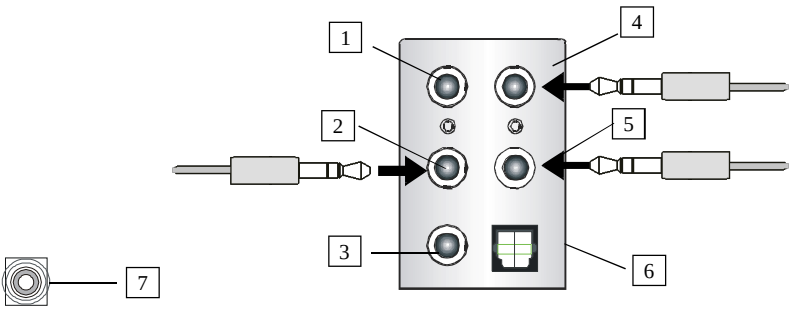


Description:
Connect two speakers to back panel's Line Out connector and two speakers to the real-channel Line Out connector.

4-Channel Analog Audio Output

1. Line In/ Side Surround Out *(Side channels, but not function on this mode)*
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6. *S/PDIF Out-Optical*
7. *S/PDIF Out-Coaxial*

n 6-Channel Mode for 6-Speaker Output

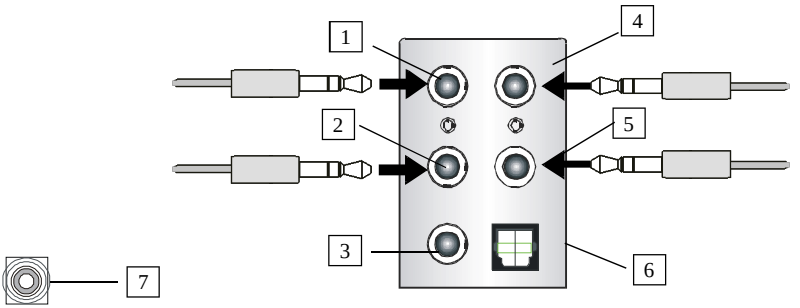


Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel and two speakers to the center/subwoofer-channel Line Out connectors.

6-Channel Analog Audio Output

1. Line In/ Side Surround Out *(Side channels, but not function on this mode)*
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel)*
6. *S/PDIF Out-Optical*
7. *S/PDIF Out-Coaxial*

n 8-Channel Mode for 8-Speaker Output



Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel, two speakers to the center/ subwoofer-channel Line Out connectors, and two speakers to the side-channel Line Out connectors.

8-Channel Analog Audio Output

1. Line In/ Side Surround Out *(Side channels)*
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels, but no functioning in this mode)*
5. Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6. *S/PDIF Out-Optical*
7. *S/PDIF Out-Coaxial*

Installing the Creative Audio Driver

You need to install the driver for Creative CA0106 to function properly before you can get access to 2-, 4-, 6- or 8- channel and SPDIF audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack4 or later before installing the driver. And for Windows® XP, you must install Windows® XP Service Pack1 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

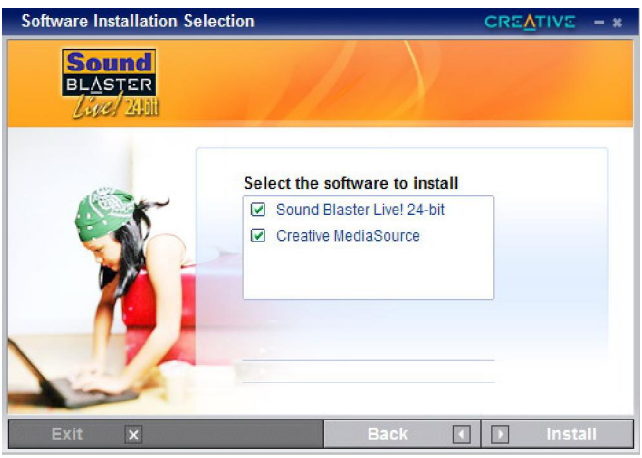
1. Insert the Creative audio driver CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Next** to enter the next page.

MSI Reminds You...

The screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

3. Select the language that you needed from the scroll list .

4. On the next page, click **Install** to start the installation and follow the setup intructions to complete the installation.

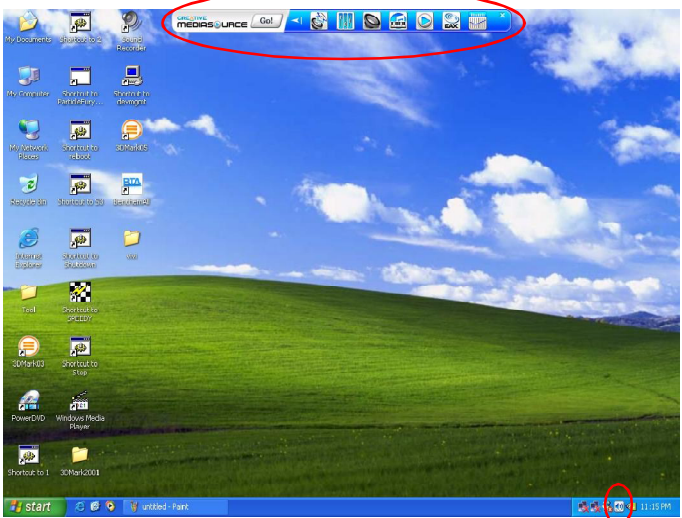


5. Finally, you have to **restart** the system on the last step .

Software Configuration

After installing the creative audio driver, you are able to use the 2-, 4-, 6- or 8-channel and the SPDIF audio feature now. Click the creative volume control audio icon from the system tray at the lower-right corner of the screen to activate the Creative Audio Configuration. Or you can move the mouse to the top of screen and a **Creative MediaSource Go** quickstart bar will float on the desktop, simply click on each icon button to enter the configuration screen .

Creative MediaSource Go quick start bar



Creative volume control icon

SURROUND MIXER

Click on the surround mixer icon to enter the configuration screen.

Here you can to create the perfect listening environment. You can adjust volume levels, select input sources and even balance your speakers.

Use Creative Surround Mixer to select the device you wish to listen to or record from. It operates in two possible modes. Click the Basic Mode or Advanced Mode button to switch between the two modes:

In Basic mode, you can:

- mix sounds from various audio input sources when playing or recording.
- control volume.

In Advanced mode, you can:

- control balance and vary the loudness ratio between front/rear speakers (fader).
- control the relative loudness levels between Front Center, Rear Center and Subwoofer loudspeakers (if any).

For more information and usage details on Creative Surround Mixer, refer to its online Help.

MSI Reminds You...

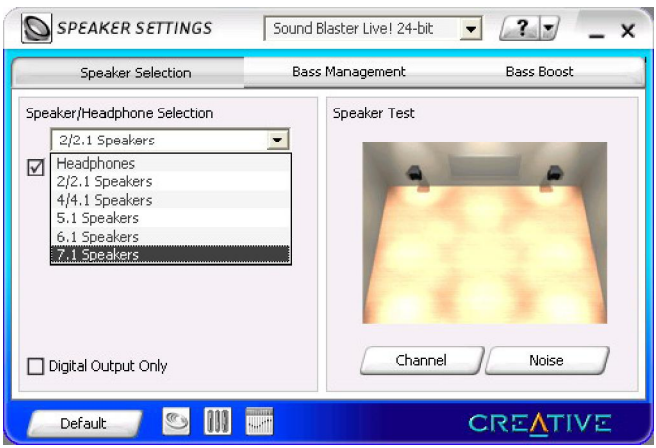
*You can simply click on the **Default** button to load the audio volume defaults for the speakers you connected.*

SPEAKER SETTINGS

Click on the speaker settings icon to enter its configuration screen.

Here you can adjust your speaker configuration from one place. You can use it to select your type of speaker system, and to adjust the volume and cutoff frequency for your subwoofer.

This is the main application to use for the following tasks:

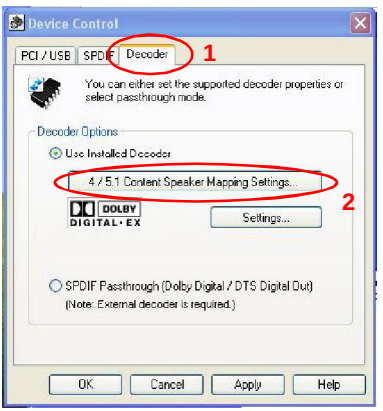


- Designating the number and configuration of speakers to use => select the speakers type that you conneted.
- Testing your speakers => click on the Channel or Noise button to test the speakers.
- Activating or deactivating Digital Output => check the Digital Output Only item to enable the Digital Output only.
- Managing bass output by selecting subwoofer crossover frequency and volume.

For more information and usage details on Creative Speaker Settings, refer to its online Help.

Please follow the steps below, if you want to play a 4/ 5.1 content in a 7.1 speaker system configurtion.

1. Choose ***Start/ Setting/ Control Panel/ View X86 Control Panel Icon (for Win XP only)/ Device control*** and click the ***Decoder*** Tab and the screen will shown below.



2. Left click the "4/5.1 Content Speaker Mapping Settings..." item and a screen will appear as below. Then you can select the left-surround and right-surround of the 4/ 5.1 content to map to side speakers or/ and rear speakers.

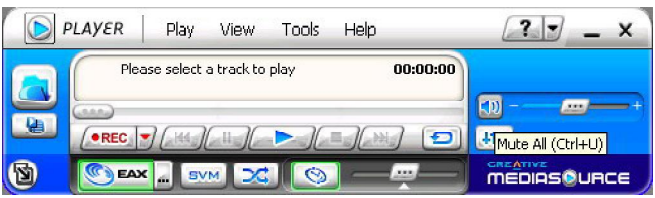
4 or 5.1 Content Speaker Mapping Settings
4 / 5.1 Content Speaker Mapping
Close
When playing a 4 / 5.1 content in a 7.1 speaker configuration, the left-surround and right-surround of the 4 / 5.1 content shall be mapped to:
Side Speakers Only
Rear Speakers Only
Side Speakers and Rear Speakers

MSI Reminds You...
*You have to choose **7.1 speakers** on Speaker Selection section to enable the **4 or 5.1Content Speaker Mapping Settings** menu.*

MEDIA SOURCE PLAYER

Click on the player icon to enter its configuration screen.

MediaSource Player is the digital music center for playing, creating, organizing and transferring digital music. This is your ultimate all-in-one digital entertainment software.



With MediaSource Player, you can:

- experience immersive listening with EAX effects.
- clean up and convert your vinyl records and cassette tapes to digital formats with the integrated recorder.
- rip CDs and create high quality compressed digital audio files (up to 320 Kbps for MP3 & 160 Kbps for WMA).
- burn personalized MP3 and audio CDs with a CD-writer, and print your own CD covers.
- organize your digital music collection with a powerful, easy to use music library.
- search for tracks with an advanced Find feature that searches as you type.
- transfer tracks and files seamlessly to and from your digital audio player with AudioSync and SmartFit.
- automatically generate playlists from your music library, based on your preferences, with Smart Playlist.
- rate each track (up to 5 stars) to automatically generate playlists of songs you like/dislike, with Smart Playlist.
- automatically crossfade the end of a track with the start of the next track during playback. MP3, WMA and WAV file formats are supported.

EAX CONSOLE

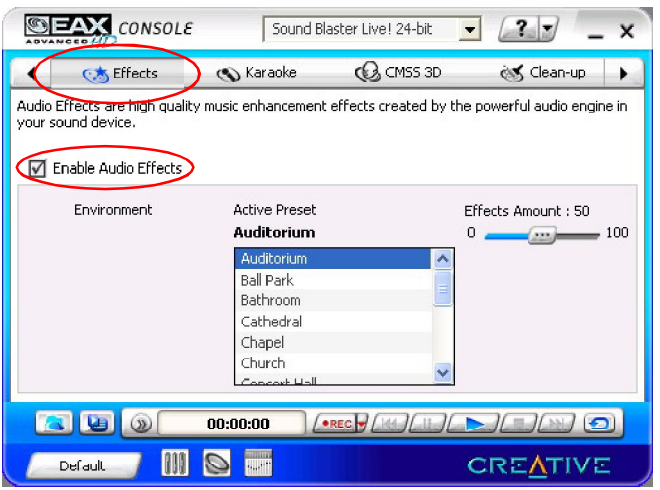
Click on the EAX console icon to enter its configuration screen.

Here you can to configure the Sound Blaster Live! 24-bit processor's effects engine. These audio effects take your computer beyond home-theater quality, immersing you in sound so vivid, your imagination can almost "see" it.

Creative EAX Console consists of five sections: **Effects**, **Karaoke**, **CMSS 3D**, **Clean-up**, and **Time Scaling**.

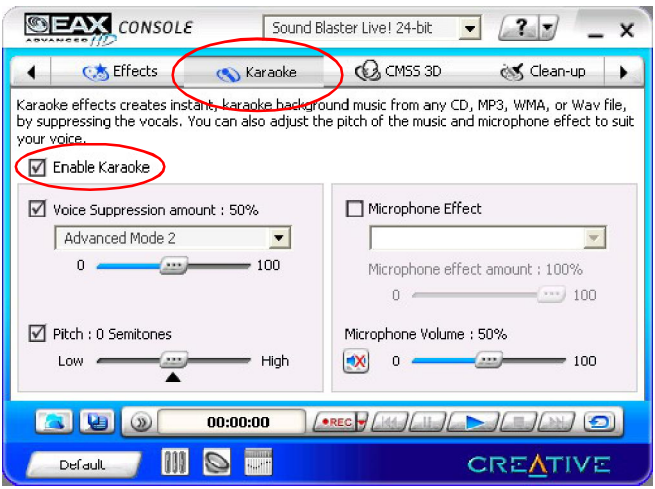
Audio Effects: Environmental Sound Processing

In Audio Effects, you have to check the **Enable Audio Effects** item to enable its configuration mean. Then you can choose how you want to enhance all kinds of ordinary two-channel sounds.



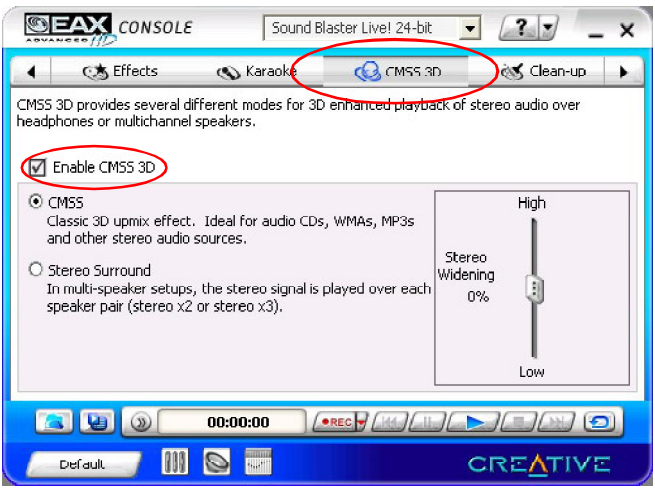
Karaoke: Creating instant karaoke music

First, you have to check the **Enable Karaoke** item to enable its configuraion maen. Then you can create instant karaoke background music from any CD, MP3, WMA, or WAV file by suppressing the vocals. You can also adjust the pitch of the music and microphone effect to suit your voice.



CMSS 3D: Simulating Surround Sound

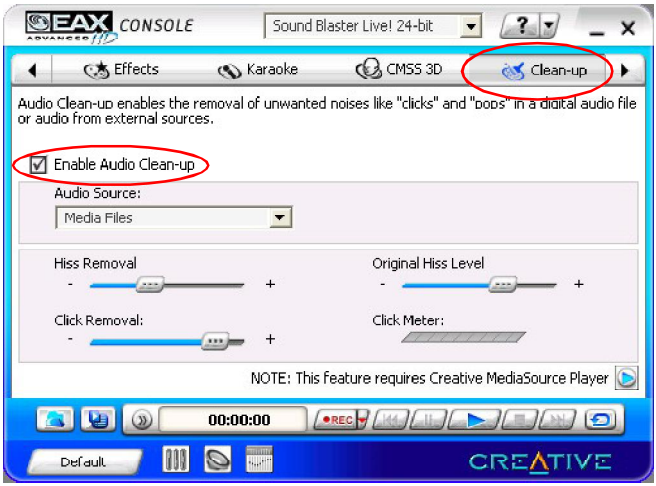
Creative MultiSpeaker Surround (CMSS) 3D makes ordinary two-channel (Left and Right Stereo) sound seem to surround you, even through only two speakers. For users with 5.1, 6.1, 7.1 multichannel speaker systems, CMSS can also simulate surround sound from ordinary stereo. This is useful for watching DVDs and VCDs, which contain only stereo soundtracks, or listening to CDs with two-channel audio. To enable the CMSS 3D configuration mean by check the **Enable CMSS 3D** item. Then you can select CMSS for multichannel audio enhancement on 4/4.1, 5.1, 6.1 or 7.1 speaker systems, and CMSS 2 for movies.



MSI Reminds You...
For a 4/4.1-speaker system, audio for your subwoofer is processed by the speaker system.

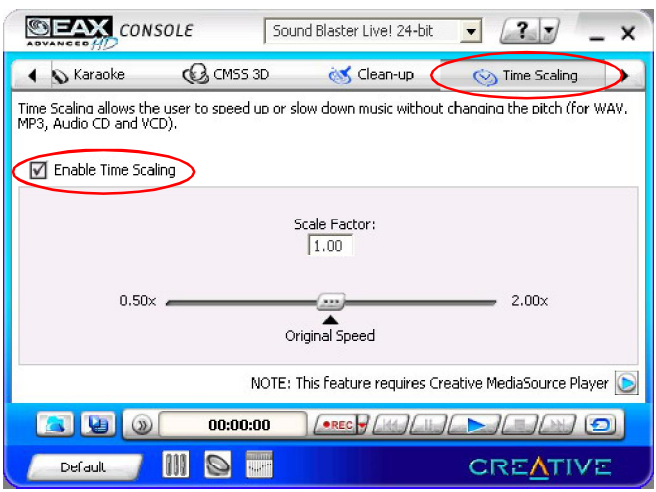
Audio Clean-up: Removing noise and distortion

First, you have to check the **Enabled Audio Clean-up** item to enable its configuration mean. Audio Clean-up allows you to process prerecorded as well as real-time audio, in order to remove noise, click sounds and other artifacts. For example, when recording music from old vinyl records, "click" and "pop" sounds can be removed with the Clean-up feature. The Click Meter informs you whenever the noise clean-up feature is activated during recording and also how many clicks are removed.



Time Scaling: Varying the speed of playback

Karaoke fans and musicians may sometimes wish to slow a song down (or speed it up) to catch the lyrics or play along with the music. However, varying the speed usually also varies the pitch of the song. With the Time Scaling feature, Sound Blaster Live! 24-bit users can maintain the pitch of a song while varying the playback speed.

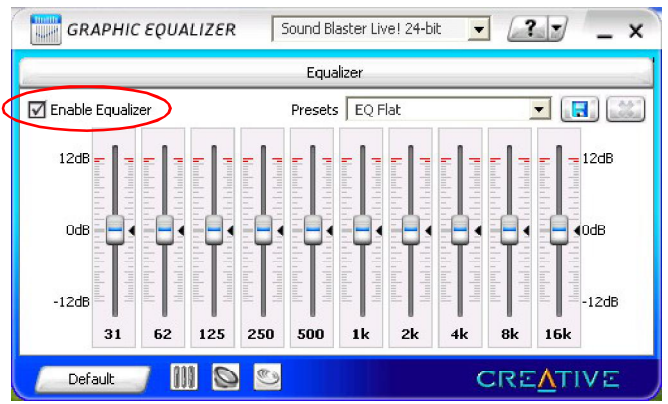


For more information and usage details on EAX ADVANCED HD, refer to the Creative EAX online Help.

GRAPHIC EQUALIZER

Click on the player icon to enter its configuration screen.

Creative Graphic Equalizer (EQ) is designed to improve and fine-tune the audio quality of your playback. You have to check the **Enabled Equalizer** item to enable the configuraion mean. Just select any one of the factory presets, or adjust the boost or cut amount (up to 12 dB) for 10 preselected frequency bands. You can also save the settings as a custom preset once you are satisfied with the adjustments.



For more information and usage details on Creative Graphic Equalizer, refer to its online Help.

MSI Reminds You...
To enter online Help for each configuration mean by click on the ? icon.

nVidia RAID Introduction

NVIDIA brings Redundant Array of Independent Disks (RAID) technology—which is used by the world's leading businesses—to the common PC desktop. This technology uses multiple drives to either increase total disk space or to offer data protection. For all levels, RAID techniques optimize storage solutions by using multiple disks grouped together and treating them as a single storage resource.

Introduction

System Requirement

Operating System Support

NVRAID supports the following operating systems:

Windows XP Home Edition
Windows XP Professional Edition
Windows 2000 Professional

RAID Arrays

NVRAID supports the following types of RAID arrays described in this section:
RAID 0: RAID 0 defines a disk striping scheme that improves the disk read and write times for many applications.
RAID 1: RAID 1 defines techniques for mirroring data.
RAID 0+1: RAID 0+1 combines the techniques used in RAID 0 and RAID 1 arrays.
Spanning (JBOD): JBOD provides a method for combining drives of different sizes into one large disk.

Summary of RAID Configurations

Array	Uses	Advantages	Drawbacks	# Hard Disks	Fault Tolerance
RAID 0	Non-critical data requiring high performance.	High data throughput.	No fault tolerance.	multiple	None
RAID 1	Small databases or any other small capacity environment requiring fault tolerance.	100% data redundancy.	Requires 2 drives for the storage space of 1 drive.	2	Yes
RAID 0+1	Critical data requiring high performance.	Optimized for both 100% data redundancy and performance. Allows spare disks.	Requires 2 drives for the storage space of 1 drive—the same as RAID level 1.	4+	Yes
JBOD	Combining odd size drives into one big drive	Combines and uses the capacity of odd size drives.	Decreases performance because of the difficulty in using drives concurrently or to optimize drives for different uses.	Multiple	No

MSI Reminds You...
Please note that users cannot install OS, either WinME or Win98, in their SATA hard drive. Under these two OSs, SATA can not support.

RAID Configuration

Basic Configuration Instructions

The following are the basic steps for configuring NVRAID:

Non-Bootable RAID Array

1. Choose the hard disks that are to be RAID enabled in the system BIOS. (Check p. 3-13 for details.)
2. Specify the RAID level, either Mirroring (RAID 1), Striping (RAID 0), Striping and Mirroring (RAID 0+1), or Spanning (JBOD) and create the desired RAID array.
3. Enter the Windows OS, run the Windows nForce Setup application and install the RAID software. (Check p.6-9 for details.)
4. Initialize the NVRAID Array Disks.

Bootable RAID Array

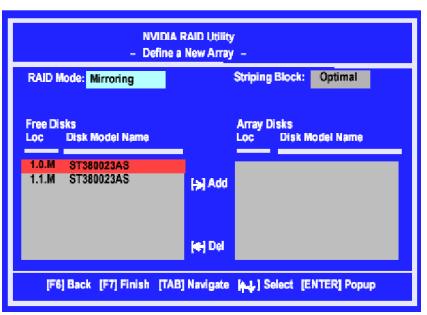
1. Choose the hard disks that are to be RAID enabled in the system BIOS. (Check p. 3-13 for details.)
2. Specify the RAID level, either Mirroring (RAID 1), Striping (RAID 0), Striping and Mirroring (RAID 0+1), or Spanning (JBOD) and create the desired RAID array.
3. Boot from the Windows CD, use the floppy disk that has the RAID driver to copy and install the nForce RAID software. (Check p.6-9 for details.)
4. Initialize the NVRAID Array Disks.

Setting Up the NVRAID BIOS

Be sure to enable the ***IDE Primary/ Secondary Master/ Slave RAID & SATA1/ SATA2/SATA3/SATA4 RAID*** items in **nVidia RAID Config** of **Integrated Peripherals** in BIOS (refer to p.3-13 for details) before configuring the NVRAID BIOS. After that press F10 to save the configuration and exit. The PC will reboot right away. Then enter the RAID BIOS Setup by pressing **F10** when prompted, and follow the procedures described below to set up the NVRAID BIOS.
NVRAID BIOS setup lets you choose the RAID array type and which hard drives you want to make part of the array.

Entering the RAID BIOS Setup

1. After rebooting your PC, wait until you see the RAID software prompting you to press **F10**. The RAID prompt appears as part of the system POST and boot process prior to loading the OS.
2. Press **F10**, and the NVIDIA RAID Utility --- **Define a New Array** window will appear.
   The default **RAID Mode** is set to ***Mirroring*** and **Striping Block** is set to ***Optimal***.



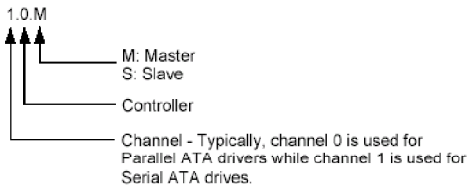
Understanding the "Define a New Array" Window

Use the Define a New Array window to

- Select the RAID Mode
- Set up the Striping Block
- Specify which disks to use for the RAID Array

Depending on the platform used, the system can have one or more channels. In a typical system there is usually one controller and multiple channels, and each channel has a slave and a master.

The channel/controller/master/slave status of each hard disk is given in the Loc (location) columns of the Free Disks and Array Disks lists.


1.0.M
M: Master
S: Slave
Controller
Channel - Typically, channel 0 is used for Parallel ATA drivers while channel 1 is used for Serial ATA drives.

In the example above, 1.0.M means the hard drive is attached to Channel 1, Controller 0, and the drive is set to Master. The following is a list of all possible combinations:

Parallel ATA

0.0.M	Channel 0, controller 0, Master
0.0.S	Channel 0, controller 0, Slave
0.1.M	Channel 0, controller 1, Master
0.1.S	Channel 0, controller 1, Slave

Serial ATA

1.0.M	Channel 1, controller 0, Master
1.1.M	Channel 1, controller 1, Master
2.0.M	Channel 2, controller 0, Master
2.1.M	Channel 2, controller 1, Master

MSI Reminds You...

There is no such thing as Slave drive in Serial ATA. All drives are considered to be Master since there is a one to one connection between the drive and the controller.

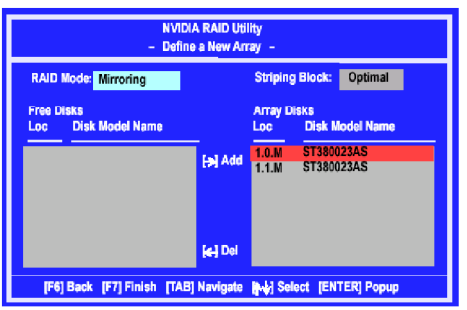
Using the Define a New Array Window
If necessary, press the tab key to move from field to field until the appropriate field is highlighted.

• Selecting the RAID Mode
By default, this is set to [Mirroring]. To change to a different RAID mode, press the down arrow key until the mode that you want appears in the RAID Mode box—either [Mirroring], [Striping], [Spanning], or [Stripe Mirroring].

• Selecting the Striping Block Size
Striping Block size is given in kilobytes, and affects how data is arranged on the disk. It is recommended to leave this value at the default [Optimal], which is 32KB, but the values can be between [4 KB] and [128 KB].

• Assigning the Disks
The disks that you enabled from the RAID Config BIOS setup page appear in the **Free Disks** block. These are the drives that are available for use as RAID array disks. To designate a free disk to be used as a RAID array disk,

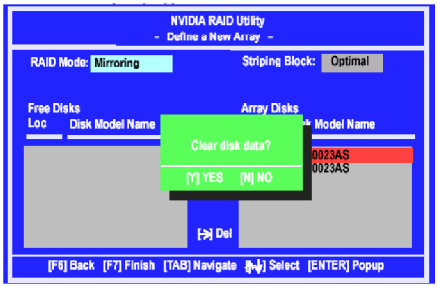
1. Tab to the F**ree Disks** section. The first disk in the list is selected.
2. Move it from the Free Disks block to the Array Disks block by pressing the right arrow key (-->). The first disk in the list is moved, and the next disk in the list is selected and ready to be moved.
3. Continue pressing the right-arrow key (<--) until all the disks that you want to use as RAID array disks appear in the **Array Disks** block.



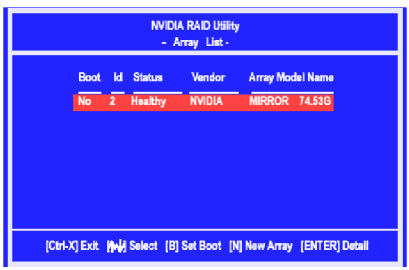
It shows that two disks have been assigned as RAID1 array disks in the figure above.

Completing the RAID BIOS Setup

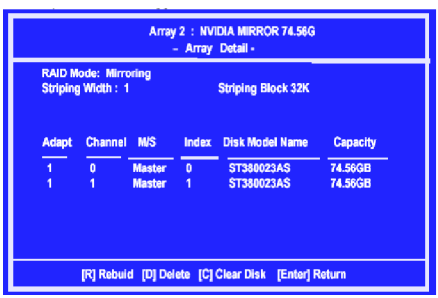
1. After assigning your RAID array disks, press **F7.** The Clear disk data prompt appears.



2. Press **Y** if you want to wipe out all the data from the RAID array, otherwise press **N**. You must choose **Yes** if the drives were previously used as RAID drives. The **Array List** window appears, where you can review the RAID arrays that you have set up.


NVIDIA RAID Utility
- Array List -
Boot Id Status Vendor Array Model Name
No 2 Healthy NVIDIA MIRROR 74.53G
[Ctrl-X] Exit [↑↓] Select [B] Set Boot [N] New Array [ENTER] Detail

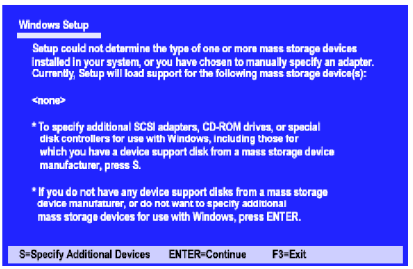
3. Use the arrow keys to select the array that you want to set up, then press **Enter.** The **Array Detail** window appears.


Array 2 : NVIDIA MIRROR 74.56G
- Array Detail -
RAID Mode: Mirroring
Striping Width : 1
Striping Block 32K
Adapt Channel M/S Index Disk Model Name Capacity
1 0 Master 0 ST380023AS 74.56GB
1 1 Master 1 ST380023AS 74.56GB
[R] Rebuild [D] Delete [C] Clear Disk [Enter] Return

4. If you want to mark this disk as empty and wipe out all its contents then press **C**.
5. At the prompt, press **Y** to wipe out all the data, otherwise press **N**.
6. Press **Enter** again to go back to the previous window and then press **F10** to exit the RAID setup. Now that the RAID setup has been configured from the RAID BIOS, the next step is to configure and load NVRAID drivers under Windows, as explained in “Installing the NVIDIA RAID Software Under Windows” on p6-9.

Installing the RAID Driver (for bootable RAID Array)

1. After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows Setup program starts.
2. Press **F6** and wait for the Windows Setup screen to appear.


Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Devices ENTER=Continue F3=Exit

3. Specify the NVIDIA drivers:
   (1) Insert the floppy that has the RAID driver, press S, then press Enter. The Windows Setup screen appears as below:

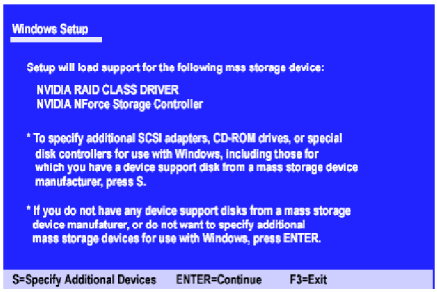
Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
NVIDIA RAID CLASS DRIVER
NVIDIA NForce Storage Controller
Enter=Select F3=Exit

MSI Reminds You...

Please follow the instruction below to make an nVIDIA Serial ATA RAID driver for yourself.

1. *Insert the MSI CD into the CD-ROM drive.*
2. *Ignore the Setup screen and use "Explorer" to browse the CD.*
3. *Copy all the contents (including the sub-folders) in the* ***\\nVidia\System\CK804\IDE\Win2k-XP*** *to a formatted floppy disk.*
4. *The driver disk for nVIDIA Serial ATA driver is done.*

   (2) Select "NVIDIA RAID CLASS DRIVER" and then press **Enter**.
   (3) Press **S** again at the Specify Devices screen, then press **Enter.**
   (4) Select "NVIDIA NForce Storage Controller" and then press **Enter.** The following Windows Setup screen appears listing both drivers:


Windows Setup
Setup will load support for the following mass storage device:
NVIDIA RAID CLASS DRIVER
NVIDIA NForce Storage Controller
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Devices
ENTER=Continue
F3=Exit

4. Press **Enter** to continue with Windows XP Installation. Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.
5. Follow the instructions on how to install Windows XP. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.

MSI Reminds You...

Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed

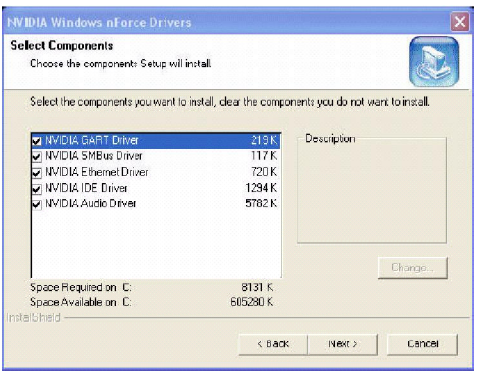
NVIDIA RAID Utility Installation

Installing the NVIDIA RAID Software Under Windows (for Non-bootable RAID Array)

The existing Windows IDE Parallel ATA driver (as well as the Serial ATA driver if SATA is enabled) must be upgraded to use the NVIDIA IDE Parallel ATA driver (as well as the NV Serial ATA driver if SATA is enabled).

This section describes how to run the setup application and install the RAID software which will upgrade the Windows IDE driver and install the RAID software.

1. Start the nForce Setup program to open the NVIDIA Windows nForce Drivers page.

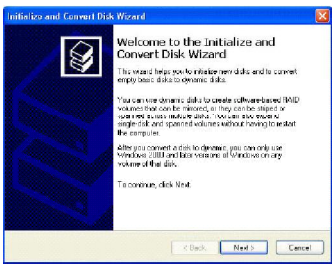

NVIDIA Windows nForce Drivers
Select Components
Choose the components Setup will install.
Select the components you want to install, clear the components you do not want to install.
NVIDIA GART Driver 219 K
NVIDIA SMBus Driver 117 K
NVIDIA Ethernet Driver 720 K
NVIDIA IDE Driver 1294 K
NVIDIA Audio Driver 5782 K
Description
Change...
Space Required on C: 8131 K
Space Available on C: 605280 K
InstallShield
< Back
Next >
Cancel

2. Select the modules that you want to install. Make sure that the “NVIDIA IDE Driver” is selected.
3. Click **Next** and then follow the instructions.
4. After the installation is completed, be sure to reboot the PC.
5. After the reboot, initialize the newly created array. See “Initializing and Using the Disk Array” on p6-10.

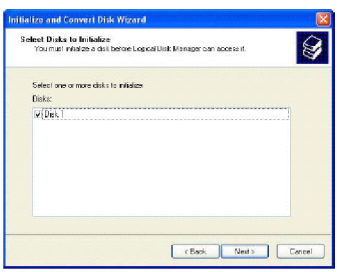
Initializing and Using the Disk Array

The RAID array is now ready to be initialized under Windows.

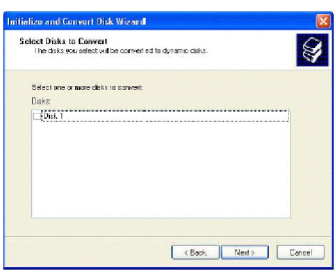
1. Launch Computer Management by clicking “Start” --> “Settings” --> “Control Panel” then open the “Administrative Tools” folder and double click on “Computer Management”.
2. Click “Disk Management” (under the “Storage” section). The Initialize and Convert Disk Wizards appears.



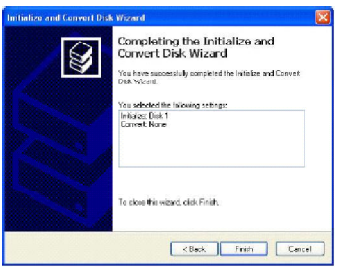
3. Click **Next**. The Select Disks to Initialize window appears. The disks listed depend on how many arrays you have configured.



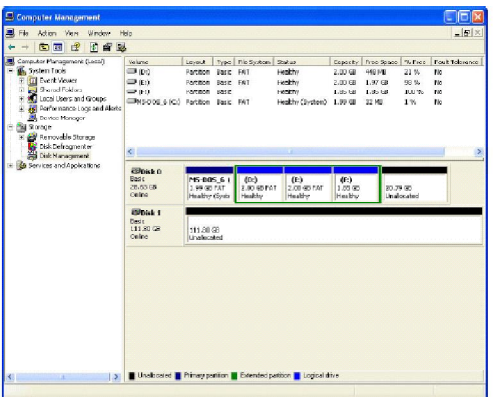
4. Click **Next**. The Select Disks to Convert window appears.



5. Check the disk in the list if you want to make the array a dynamic disk, then click **Next**. The Completing the Initialize and Convert Disk Wizard window appears.


Initialize and Convert Disk Wizard
Completing the Initialize and Convert Disk Wizard
You have successfully completed the Initialize and Convert Disk Wizard.
You selected the following settings:
Initialize: Disk 1
Convert: None
To close this wizard, click Finish.
< Back
Finish
Cancel

6. Click **Finish**. The “Computer Management” window appears.



The actual disks listed will depend on your system, and the unallocated partition is the total combined storage of two hard disks. You must format the unallocated disk space in order to use it.

7. Format the unallocated disk space. Right click “Unallocated space”, select “New Partition…” and follow the wizard. After the drive has been formatted, it is ready for use.

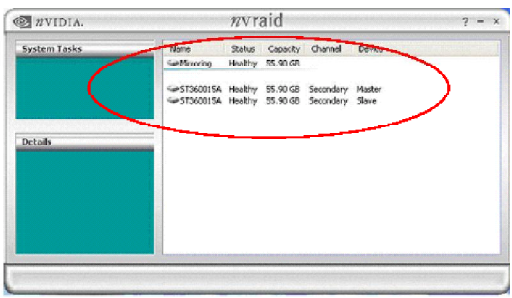
RAID Drives Management

There is an application called NVRAIDMAN which helps you perform the following tasks of nVDIA RAID.

- **Viewing RAID Array Configurations**
  View an array configuration (mirrored, striped, mirror-striped, JBOD, or any supported combination)
- **Setting Up a Spare RAID Disk**
  - View free and/or dedicated free disks
  - Designate a free disk to a particular array
- **Rebuilding a RAID Mirrored Array**
  - Rebuild a broken mirrored array
  - Watch the progress of rebuilding an array

Viewing RAID Array Configurations

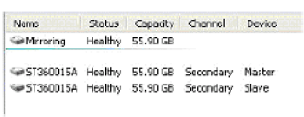
To view your RAID configuration from Windows, launch the NVRAID Management utility by double-clicking NvRaidMan.exe (the default location of NvRaidMan.exe is in \\nVidia\System\CK8S\Win2k-XP\IDE\WinXP of the setup CD accompanied with your mainboard).
The RAID configuration information appears in the right-side pane, as shown below.



MSI Reminds You...
The information in the figures in this part may very from what it is shown in your system.

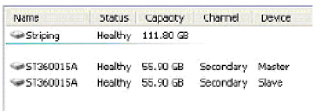
NVRAID Mirrored Array

The figure below shows an example of a two hard drive mirrored array using identical 55.90 GB IDE hard drives (ST360015A), where one drive is configured as Master and the other drive is configured as Slave. The total hard disk space used is 55.90 GB. (1.1 GB = 1,073,741,824 bytes)



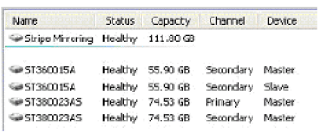
NVRAID Striped Array

The figure below shows an example of a two hard drive striped array using identical 55.90 GB IDE hard drives (ST360015A), where one drive is configured as Master and the other drive is configured as Slave. The total disk space used is 111.80 GB.


Name Status Capacity Channel Device
Striping Healthy 111.80 GB
ST360015A Healthy 55.90 GB Secondary Master
ST360015A Healthy 55.90 GB Secondary Slave

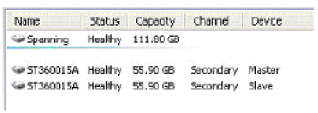
NVRAID Striped Mirror Array

The figure below shows an example of a four hard drive stripe-mirrored array. The total disk space used is 111.80 GB.


Name Status Capacity Channel Device
Stripe Mirroring Healthy 111.80 GB
ST360015A Healthy 55.90 GB Secondary Master
ST360015A Healthy 55.90 GB Secondary Slave
ST380023AS Healthy 74.53 GB Primary Master
ST380023AS Healthy 74.53 GB Secondary Master

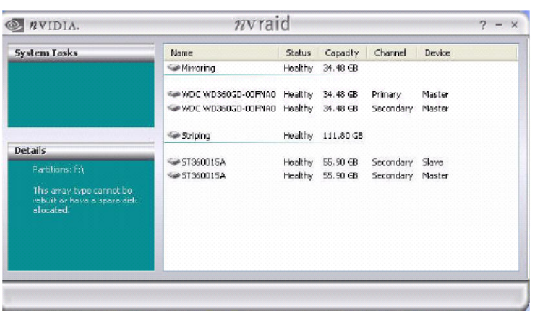
NVRAID Spanning (JBOD) Array

The figure below shows an example of a two hard drive spanning array. The total disk space used is 111.80 GB.


Name Status Capacity Channel Device
Spanning Healthy 111.80 GB
ST360015A Healthy 55.90 GB Secondary Master
ST360015A Healthy 55.90 GB Secondary Slave

NVRAID Mirrored Array and a Striped Array

Figure 3.6 shows an example of a two hard drive mirrored array as well as a two hard drive striped array.



Setting Up a Spare RAID Disk

You can designate a hard drive to be used as a spare drive for a RAID 1 or RAID 0+1 array2. The spare drive can take over for a failed disk. NVRAID supports two types of spare drives:

• Free Disk

A free disk is a disk that is not part of any RAID array, but can be used by any available RAID 1 or RAID 0+1 array that requires a particular disk when one of its disks crashes or becomes unusable. The process is automatic and doesn't require any user interaction.

For example, if you have a system with four hard disks where one disk is used to boot the OS, two hard drives are set up in a mirrored array, and a fourth hard disk is set up as a free disk, then if one of the mirrored array drives fails, the free disk will be automatically assigned to the mirrored array to be used instead of the failed disk.

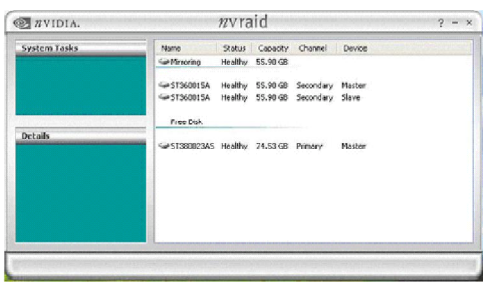
• Dedicated Disk

A dedicated free disk is a disk that is assigned to a RAID 1 or RAID 0+1 array and that disk is used by that array only when needed, for example during a system crash where a RAID mirrored drive is broken. The dedicated disk can be used only by the array that it is assigned to and not by any other array, unlike a free disk which can be used by any available RAID 1 or RAID 0+1 array.

Assigning a Free Disk

To mark a disk as free, or not a part of any array,

1. Enter the system BIOS setup and make sure that the drive that you want to mark as free is RAID enabled.
2. Enter the RAID BIOS and make sure that the drive is not part of any array (if one exists).
3. Boot into Windows and run the NVRAIDMAN program. The drive appears under the Free Disk section. The figure below shows an example of the NVRAIDMAN display if you have a mirror array and one free disk.



Assigning a Dedicated Disk
To mark a disk as dedicated, or reserve it for use by a specific array,

Step 1: Mark the Disk as a Free Disk
1. Enter the system BIOS setup and make sure that the drive that you want to mark as free is RAID enabled.
2. Enter the RAID BIOS and make sure that the drive is not part of any array (if one exists).
3. Boot into Windows and run the NVRAIDMAN program. The drive appears under the Free Disk section.

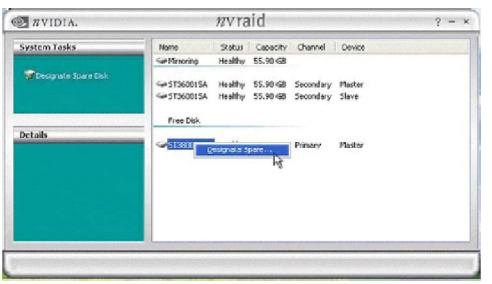
Step 2: Dedicate the Free Disk to an Array
While running NVRAIDMAN, dedicate the free disk to an array using one of the following two methods:

- Method 1: Select a free disk and then assign it to an array.
- Method 2: Select an array and then assign a free disk to it.

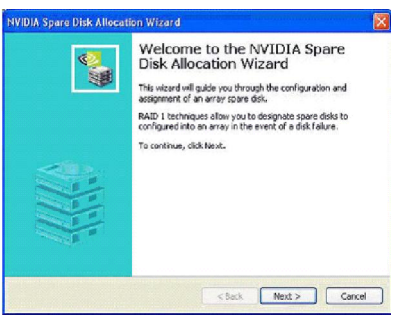
Both methods are equally simple ways of accomplishing the same task.

Method 1: Select a free disk and then assign it to an array.

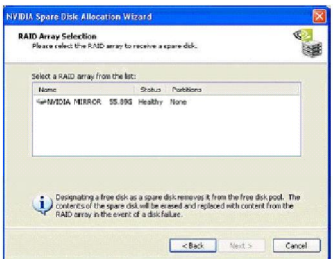
1. Right click one of the available disks under the Free Disk section. The pop-up menu appears.



2. Select **Designate Spare** from the menu to launch the Spare Disk Allocation Wizard.

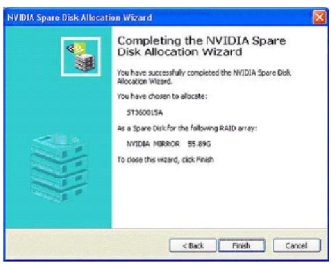

NVIDIA Spare Disk Allocation Wizard
Welcome to the NVIDIA Spare Disk Allocation Wizard
This wizard will guide you through the configuration and assignment of an array spare disk.
RAID 1 techniques allow you to designate spare disks to configured into an array in the event of a disk failure.
To continue, click Next.
< Back
Next >
Cancel

3. Click **Next**.
The RAID Array Selection page appears.

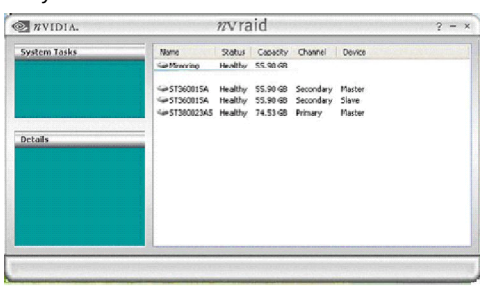

NVIDIA Spare Disk Allocation Wizard
RAID Array Selection
Please select the RAID array to receive a spare disk.
Select a RAID array from the list:
Name
Status
Partitions
NVIDIA MIRROR
55.89G
Healthy
None
Designating a free disk as a spare disk removes it from the free disk pool. The contents of the spare disk will be erased and replaced with content from the RAID array in the event of a disk failure.
< Back
Next >
Cancel

4. From the RAID Array Selection page, select one of the arrays from the list. This is the array to which you want to allocate the dedicated free disk.

5. Click **Next**.
The Completing the NVIDIA Spare Disk Allocation page appears.


NVIDIA Spare Disk Allocation Wizard
Completing the NVIDIA Spare Disk Allocation Wizard
You have successfully completed the NVIDIA Spare Disk Allocation Wizard.
You have chosen to allocate:
ST360015A
As a Spare Disk for the following RAID array:
NVIDIA MIRROR 55.89G
To close this wizard, click Finish.
< Back
Finish
Cancel

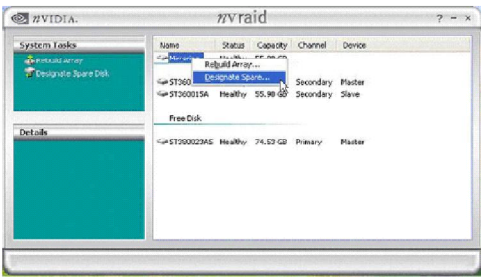
6. Click **Finish**.
As shown in figure below, the ST380023AS drive is now a dedicated free disk in the mirrored array. If a system crash occurs that causes any of the two ST360015A drives to fail, the ST380023AS hard drive will take over and be used in the newly formed mirrored array.



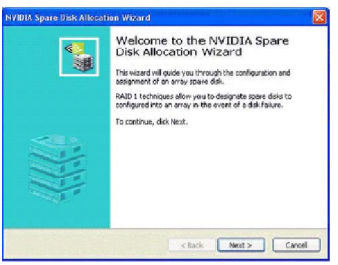
Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.

Method 2: Select an array and then assign a free disk to it.

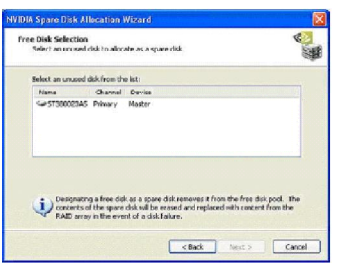
1. Right click on the array to which you want to assign a dedicated free disk. The pop-up menu appears.



2. Select **Designate Spare** from the menu to launch the Spare Disk Allocation Wizard.

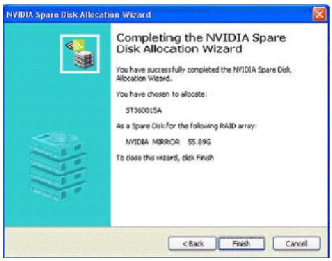

NVIDIA Spare Disk Allocation Wizard
Welcome to the NVIDIA Spare Disk Allocation Wizard
This wizard will guide you through the configuration and assignment of an array spare disk.
RAID 1 techniques allow you to designate spare disks to configured into an array in the event of a disk failure.
To continue, click Next.
< Back
Next >
Cancel

3. Click **Next.** The Free Disk Selection page appears.

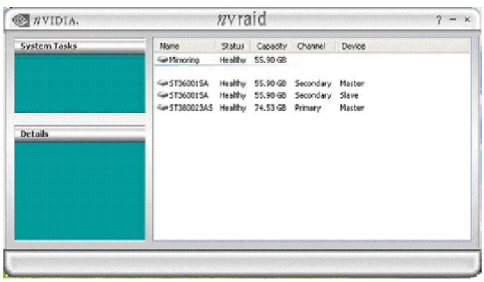

NVIDIA Spare Disk Allocation Wizard
Free Disk Selection
Select an unused disk from the list:
Name
Channel
Device
ST3500023AS
Primary
Master
Designating a free disk as a spare disk removes it from the free disk pool. The contents of the spare disk will be erased and replaced with content from the RAID array in the event of a disk failure.
< Back
Next >
Cancel

4. From the Free Disk Selection page, select one of the disks from the list. Please note that there can be more than one disk to choose from.

5. Click **Next**. The Completing the NVIDIA Spare Disk Allocation page appears.


NVIDIA Spare Disk Allocation Wizard
Completing the NVIDIA Spare Disk Allocation Wizard
You have successfully completed the NVIDIA Spare Disk Allocation Wizard.
You have chosen to allocate:
ST360015A
As a Spare Disk for the following RAID array:
NVIDIA MIRROR 55.89G
To close this wizard, click Finish
< Back
Finish
Cancel

6. Click **Finish**.
You have now assigned a dedicated free disk to a mirrored array.

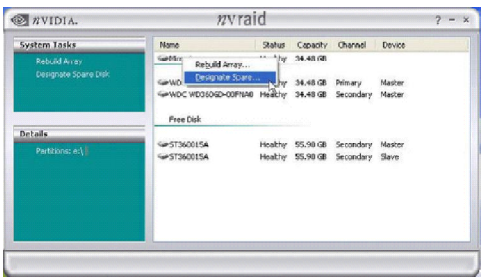


Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.

Example of Dedicating a Free Disk in a RAID 1 or RAID 0+1 Array

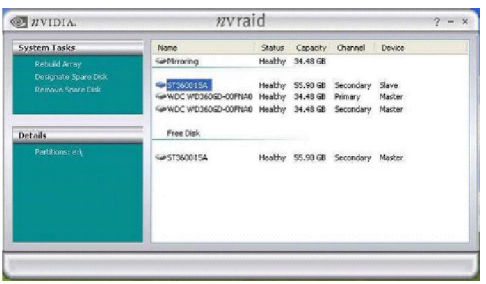
You can also assign a dedicated free disk to a RAID 1 or a RAID 0+1 array, using the same process.

1. Right-click either the free disk that you want to dedicate to an array, the array type, or the array drives as shown in the figure below. Then click Designate Spare to launch the Spare Disk Allocation Wizard.



2. Click **Designate Spare** and then follow the instructions in the Wizard. The figure below shows an example of a RAID 1 array that has one spare disk dedicated to it.

Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.



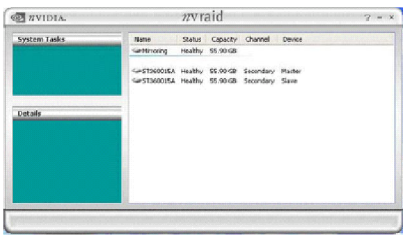
Rebuilding a RAID Mirrored Array

Rebuilding is the process of recovering data from one hard drive to another. All data is copied from one hard drive to another and then the data is synchronized between the two hard drives. This only applies to RAID 1 array as well as a RAID 0+1 array.

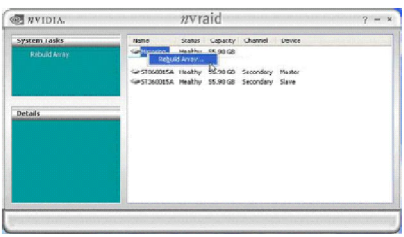
Rebuilding Instructions

After creating a mirrored array, you can rebuild the array using the following steps:

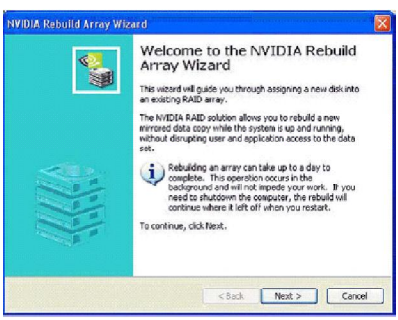
1. Go to Windows and run the NVRAID Management utility. The figure below shows an example of a system with one mirrored array.



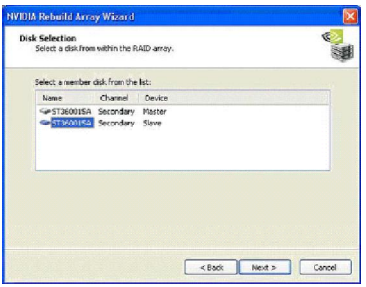
2. Right-click on Mirroring. The popup menu appears.



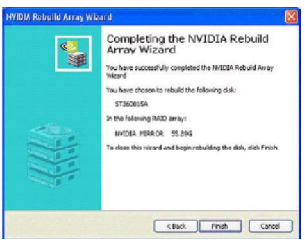
3. From the popup menu, click **Rebuild Array**. The NVIDIA Rebuild Array Wizard appears.


NVIDIA Rebuild Array Wizard
Welcome to the NVIDIA Rebuild Array Wizard
This wizard will guide you through assigning a new disk into an existing RAID array.
The NVIDIA RAID solution allows you to rebuild a new mirrored data copy while the system is up and running, without disrupting user and application access to the data set.
Rebuilding an array can take up to a day to complete. This operation occurs in the background and will not impede your work. If you need to shutdown the computer, the rebuild will continue where it left off when you restart.
To continue, click Next.
< Back
Next >
Cancel

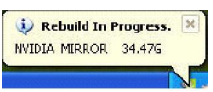
4**.** Click **Next.** The Disk Selection page appears.



5. Select the drive that you want to rebuild by clicking it from the list, then click **Next**. The Completing the NVIDIA Rebuild Array page appears.



6. Click **Finish**. The array rebuilding starts after a few seconds, and a small pop-up message appears towards the bottom right corner of the screen as shown in the figure below.



During the rebuilding process, the NVRAID Management utility screen shows the status under the System Tasks and Details sections.

More About Rebuilding Arrays

• Rebuilding Occurs in the Background

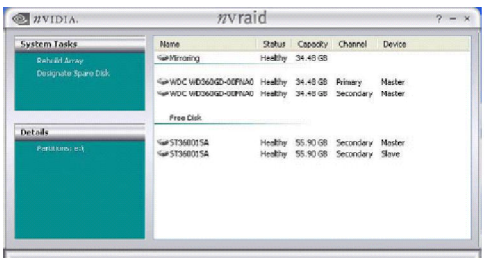
The rebuilding process is very slow (it can take up to a day) and occurs in the background so as not to affect the performance of the system.

• Rebuilding Applies Only to RAID 1 or RAID 0+1 Arrays

Rebuilding an array works only when using RAID1 and/or RAID 0+1. Rebuilding does not apply to RAID 0 and JBOD arrays.

• You Can Use Any Available Free Disk

You can rebuild a mirrored array using any available Free Disk or Dedicated Disk. For example, the figure below shows a mirrored array using 34.48 GB HD while having two Free Disks each 55.90 GB large.



To use one of these available free disks to rebuild your array, follow the same steps as explained in “Rebuilding a RAID Mirrored Array” on p.5-20, except when prompted to select a disk, choose one of the two available free disks.

7

Silicon Image SATARAID Introduction

Silicon Image's SATARAID software provides Serial ATA RAID 0 (Striping) , RAID 1 (Mirroring) and concatenation functionality to enhance the industry's leading PCI-to-SATA host controller products. Two major challenges facing the storage industry today are keeping pace with the increasing performance demands of computer systems by improving disk I/O throughput and providing data accessibility in the face of hard disk failures while utilizing full disk capacity. With Silicon Image Serial ATA host controller and SATARAID, both of these problems are solved. SATARAID software provides a Graphical User Interface (GUI) for easy-to-use configurations of the RAID Groups.

MSI Reminds You...
All the information/volumes listed in your system might differ from the illustrations in this appendix.

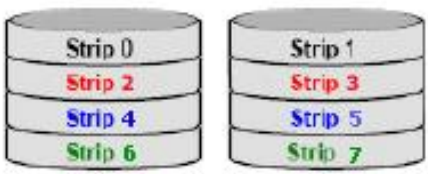
Introduction

RAID - Redundant Array of Independent Disks

RAID technology manages multiple disk drives to enhance I/O performance and provide redundancy in order to withstand the failure of any individual member, without loss of data. SATA RAID provides two RAID Set types, Striping (RAID 0) and Mirroring (RAID 1).

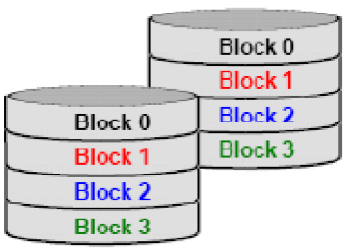
RAID 0 (Striping)

Striping is a performance-oriented, non-redundant data mapping technique. While Striping is discussed as a RAID Set type, it actually does not provide fault tolerance. Striping arrays use multiple disks to form a larger virtual disk.



RAID 1 (Mirroring)

Disk mirroring creates an identical twin for a selected disk by having the data simultaneously written to two disks. This redundancy provides instantaneous protection from a single disk failure. If a read failure occurs on one drive, the system reads the data from the other drive.

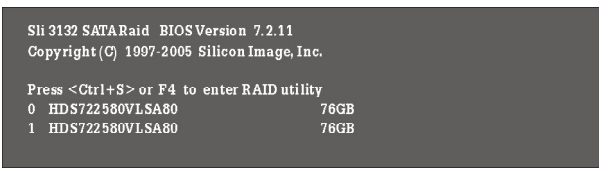


Concatenation

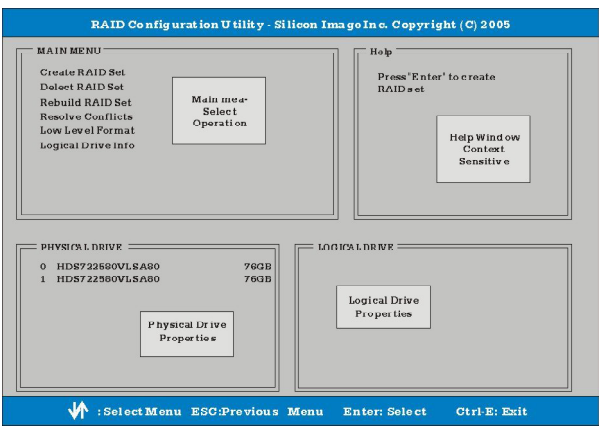
Concatenation provides a method for combining drives of different sizes into one large disk

Creating and Deleting RAID sets with BIOS Utility

Creating and deleting RAID sets must be performed in the BIOS for operating systems other than Windows 2000 and XP.For 2000 and XP, RAID sets can be created and managed by either the BIOS utility or the SATARAID GUI.
Be sure to enable the ***Silicon RAID Controller*** in **Onboard Devices Configuration** of **Integrated Peripherals** in BIOS before configuring the silicon BIOS. After that press F10 to save the configuration and exit. During boot up, a screen similar to that below will appear for about 5 seconds. Press CTRL+S or the F4 key to enter the BIOS RAID utility.


Sli 3132 SATARaid BIOS Version 7.2.11
Copyright (C) 1997-2005 Silicon Image, Inc.
Press <Ctrl+S> or F4 to enter RAID utility
0 HDS722580VLSA80 76GB
1 HDS722580VLSA80 76GB

The RAID Utility menu screen will be displayed. A brief description of each section is presented on the next page.



Main Menu

The Main Menu in the upper left corner is used to choose the operation to be performed. The selections are:
Create RAID set
Delete RAID set
Rebuild RAID 1 set
Resolve Conflicts
Low Level Format
Logical Drive Info

Create RAID set is used to create a new legacy RAID Set or for allocating legacy spare drives.
Delete RAID set is used to delete a legacy RAID Set or to deallocate a legacy spare drive.
Rebuild RAID 1 Set is used to initiate the rebuild of a RAID 1 set after, for example, a drive in the Group has been replaced.
Resolve Conflicts is used to automatically find the member drives of a RAID set which has been disrupted (physical drives
swapped around, for example) and restore the Set to proper operation.
Low Level Format allows a single drive to have its data completely wiped out. Drives assigned to Sets or allocated as spares
cannot be low level formatted.
Logical Drive Info shows the current configuration of each RAID set, allocated spare, and unallocated physical drive attached
to the SATA host adapter.
These operations are detailed in the pages that follow.

Help Window

This window displays context-sensitive help and status messages.

Physical Drive Information

This window displays the model number and capacities of the drives physically attached to the SATA host adapter.

Logical Drive Information

This window displays all logical drives connected to the controller. The upper part lists RAID sets and JBOD drives reported to the system BIOS. The lower part lists spare drives, reserved drives, conflict drives, and invalid drives not reported to the system BIOS.

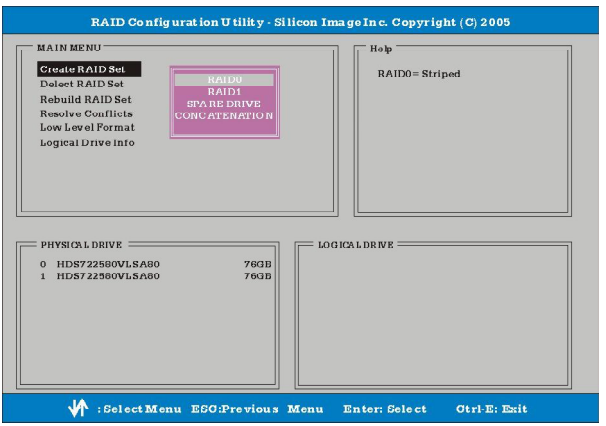
Command Line

The bottom line of the display lists the currently active command keys:
Up and Down arrows select the menu item or action
ESC takes the user to the previous menu
Enter selects the highlighted choice
Ctrl-E exits the utility
Other keys may be active depending upon the currently selected action.

Creating RAID Groups

As previously discussed, the Silicon Image SATA host adapter supports RAID 0, 1, and Concatenation configurations. The selection of the RAID level to be used should be based upon factors including performance, data security, and number of drives available. It is best to carefully consider the long-term role of the system and plan the data storage strategy appropriately.Silicon Image has made the creation of RAID sets very simple. They can be created either automatically or to allow the greatest flexibility, manually.

1. Select “Create RAID set”
2. Choose a RAID 0 Striped, a RAID 1 Mirrored, or a Concatenation combination set.



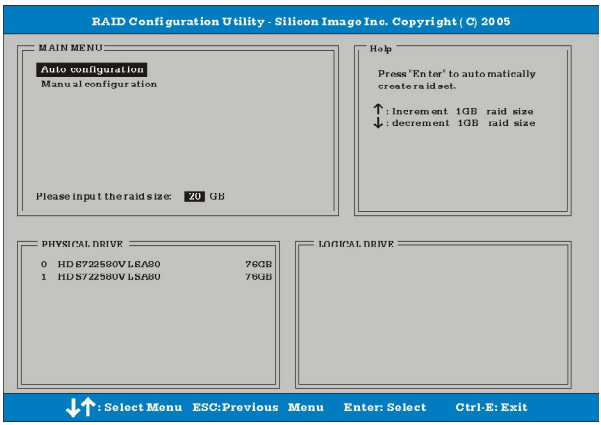
3. Select “Automatically” or “Manually configuration” of the RAID Set.

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2005
MAIN MENU
Auto configuration
Manual configuration
Help
Press 'Enter' to automatically create raid set.
Stripe size is 64K
First drive is drive 0
PHYSICAL DRIVE
0 HDS722580VLSA80 76GB
1 HDS722580VLSA80 76GB
LOGICAL DRIVE
: Select Menu ESC:Previous Menu Enter: Select Ctrl-E: Exit

4. If manual configuration is selected, the chunk size of RAID Sets can be selected.

5. If auto configuration is selected, BIOS will select RAID member drives automatically.

6. Select RAID set size with ↑ and ↓ keys.


RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2005
MAIN MENU
Auto configuration
Manual configuration
Please input the raid size: 20 GB
Help
Press 'Enter' to automatically create raid set.
↑: Increment 1GB raid size
↓: decrement 1GB raid size
PHYSICAL DRIVE
0 HDS722580VLSA80 76GB
1 HDS722580VLSA80 76GB
LOGICAL DRIVE
↓↑: Select Menu ESC:Previous Menu Enter: Select Ctrl-E: Exit

7. After the RAID set size is set, the message “Are You Sure?” will display before completing the configuration. Answer “N” to abort the creation of the new RAID set, or “Y” to proceed with the RAID set creation.

8. RAID sets can be created in both BIOS and in the SATARaid GUI. If you have excess capacity left on your hard drives after creating a RAID set in the BIOS, you can later go to the SATARaid GUI to create additional logical drives that fully utilize the capacity on all your hard drives.

Creating Spare Drive

If there is a RAID 1 set, spare driver can be created. The spare drive can be allocated to the RAID 1 set in the event of a failure of one of the drives in the RAID 1 set.

1. To create a spare drive for RAID 1 set, Select “Create RAID set”
2. Select “Spare Drive” and press Enter.
3. Select spare drive from the physical drive list and press Enter.
4. Select spare drive size with ↑ and ↓ keys.
5. After the spare drive size is set, the message “Are You Sure?” will display before completing the configuration. Answer “N” to abort the creation of the spare drive, or “Y” to proceed with the spare drive creation.

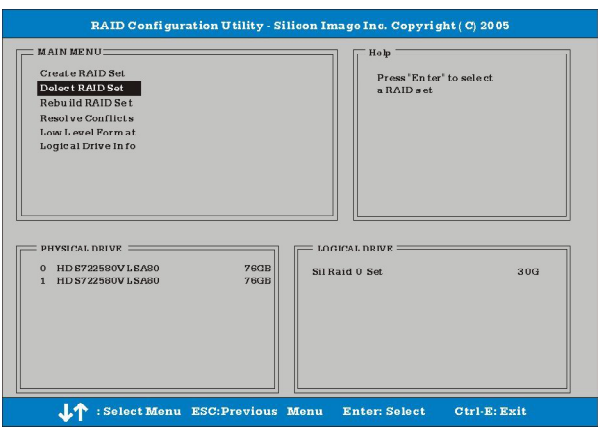
Creating Concatenation

Since BIOS no longer reports non-RAID drives to the system BIOS, if a non-RAID boot drive or data drive is desired, a Concatenation can be created so BIOS will report it to the system BIOS.

1. To create a Concatenation, Select ”Create RAID set”
2. Select “Concatenation” and press Enter.
3. Select Concatenation drive from the physical drive list and press Enter.
4. Select Concatenation size with ↑ and ↓ keys.
5. After the Concatenation size is set, the message “Are You Sure?” will display before completing the configuration. Answer “N” to abort the creation of the Concatenation, or “Y” to proceed with the Concatenation creation.

Deleting RAID Groups, Spare Drive, and Concatenation

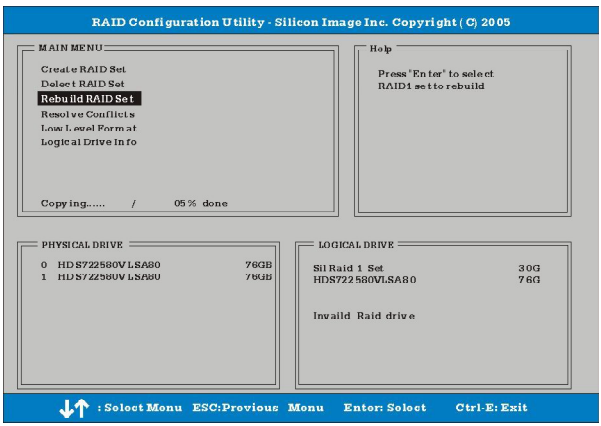
1. To remove one or more RAID sets, spare drives, and Concatenation, select “Delete RAID set”
2. Select the desired item to delete from the logical drive list and press Enter.
3. Press “Y” when asked, “Are You Sure?”
4. The drives will be returned to the selection of logical drives from which a new RAID set can be created.



Rebuild RAID 1 Set

This menu selection is used to initiate the copying of data from an existing drive to a replacement drive that has been installed in a RAID 1 set after the failure of one of the members.

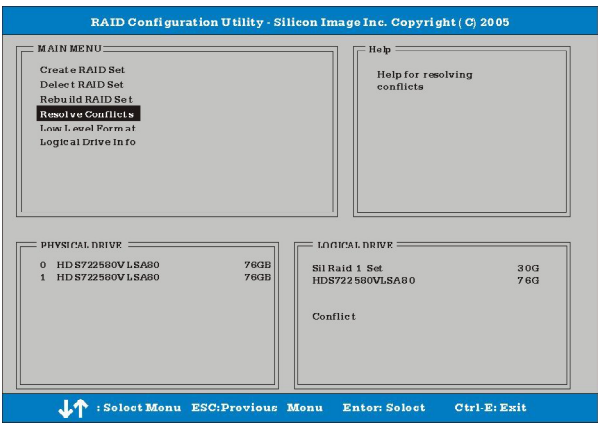
1. Select “Rebuild RAID 1 set”
2. Select the desired set and press Enter.
3. Press “Y” when asked, “Are You Sure?”
4. The set will be rebuilt. The status of the rebuild is displayed in the MAIN MENU window.



Resolving Conflicts

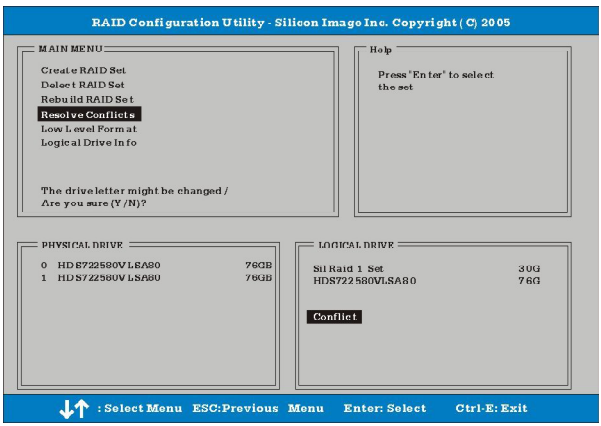
When a RAID set is created, the metadata written to the disk includes drive connection information including the channel on the host adapter to which it is connected. If after a disk failure the replacement disk was previously part of a RAID set or used in another system, it may have conflicting metadata, specifically in reference to the drive connection information. If so, this will prohibit the RAID set from being either created or rebuilt. In order for the RAID set to function properly, this old metadata must be first overwritten with the new metadata. To correct this, select “Resolve Conflict” and the correct metadata, including the correct drive connection information; will automatically be written to the replacement disk.

1. Select “Resolve Conflicts” and press Enter.



2. Select the “Conflict” entry in the Logical Drive Status window and press Enter.

3. Note that some conflict resolutions may result in the drive letter assignment changing; for example the RAID set may have been drive D: but after the conflict resolution, it may become drive E. Be aware of this when performing a conflict resolution. To maintain the same drive lettering, the SATA cables connected to the drives may need to be swapped, or in the case of a SATA-based removable drive unit, the order of the drives within the chassis made need to be changed.
Press 'Y' to accept the change and resolve the conflict.



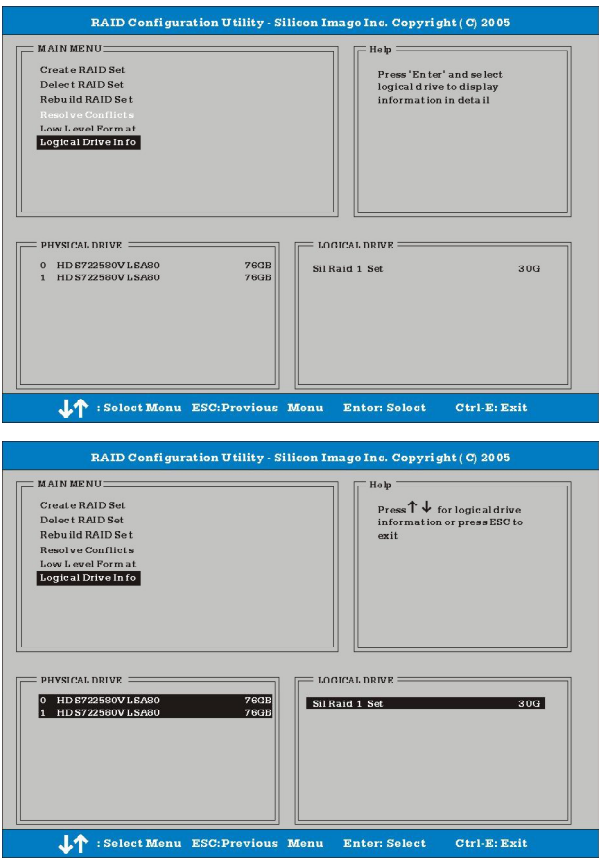
4. The conflict will be resolved. The RAID Set will appear in the Logical Drive window.

Low Level Formatting

The Low Level Format menu selection allows the complete erasure of data on a hard drive. This is not an action, which typically needs to be performed as formatting the drive under Windows is usually sufficient to prepare the drive for use.

Logical Drive Information

This menu item allows the display of the assignment of physical drives within a logical set (RAID set, RAID 1 spare, or unassigned). It is a display-only function. Use the up and down arrow keys to scroll between the drives in the Logical Drive Properties window. Press the ESC key when done viewing logical drive information.

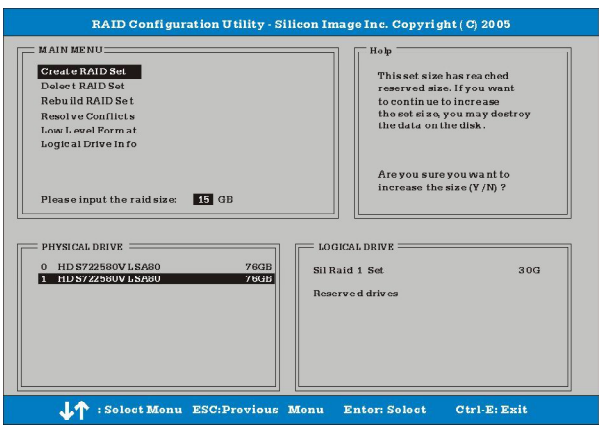

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2005
MAIN MENU
Create RAID Set
Delect RAID Set
Rebuild RAID Set
Resolve Conflicts
Low Level Format
Logical Drive Info
Help
Press 'Enter' and select logical drive to display information in detail
PHYSICAL DRIVE
0 HDS722580VLEA80 76GB
1 HDS722580VLSA80 76GB
LOGICAL DRIVE
Sil Raid 1 Set 30G
: Select Menu ESC:Previous Menu Enter: Select Ctrl-E: Exit
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2005
MAIN MENU
Create RAID Set
Delect RAID Set
Rebuild RAID Set
Resolve Conflicts
Low Level Format
Logical Drive Info
Help
Press ↑ ↓ for logical drive information or press ESC to exit
PHYSICAL DRIVE
0 HDS722580VLEA80 76GB
1 HDS722580VLSA80 76GB
LOGICAL DRIVE
Sil Raid 1 Set 30G
: Select Menu ESC:Previous Menu Enter: Select Ctrl-E: Exit

Reserved Drive and Setting Size for RAID Set, Spare Drive, or Concatenation

Once a physical drive has been used to create a RAID set, spare drive, or Concatenation by BIOS utility, BIOS saves user selected set or drive size in the reserved area of the physical drive. There is no way to remove the reserved area information even after the user deletes the set or drive. For this reason, after a set or drive is deleted, BIOS recognizes the physical drive as a reserved logical drive and it will not report the drive to the system BIOS.

When user selects to create a RAID set, spare drive, or Concatenation, he or she has to select size for the set or drive. BIOS will set a default size for it and user can use the ↑ and ↓ keys to change the size. If the physical drive has never been used to create a set or drive by the BIOS before, the full size of the physical drive will be set as default size. Otherwise, BIOS will set default size to the size it saved in the reserved area of the physical drive before.

If the user wants to increase the default size, BIOS will display a warning message in the help window and for user's response before changing the default size.


RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2005
MAIN MENU
Create RAID Set
Delect RAID Set
Rebuild RAID Set
Resolve Conflicts
Low Level Format
Logical Drive Info
Please input the raid size: 15 GB
Help
This set size has reached reserved size. If you want to continue to increase the set size, you may destroy the data on the disk.
Are you sure you want to increase the size (Y/N) ?
PHYSICAL DRIVE
0 HDS722580VLSA80 76GB
1 HDS722580VLSA80 76GB
LOGICAL DRIVE
Sil Raid 1 Set 30G
Reserved drives
: Select Menu ESC:Previous Menu Enter: Select Ctrl-E: Exit

Installing the RAID Driver (For bootable RAID array)

Install Driver in Windows XP / 2000

† **New Windows XP / 2000 Installation**

The following details the installation of the drivers while installing Windows XP / 2000.

1. Start the installation:
   Boot from the CD-ROM. Press F6 when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP/2000 Setup window is generated, press <S> key to specify an Additional Device(s).
3. Insert the driver diskette ***Silicon Image RAID Driver For Win2K/XP*** driver into drive A: and press <Enter>.

MSI Reminds You...

The Silicon Image Sil 3132 SATARAID Driver Installation Disk should be accompanied in the mainboard package. You may make the Serial ATA RAID driver by yourself by following the instruction below.

1. *Insert the MSI CD into the CD-ROM drive.*
2. *Click the "Browse CD" botton on the Setup Screen.*
3. *Copy all the contents (including the sub-folders) in the* ***\\nVidia\IDE\Silicon_Image\Sil3132\RAID*** *to a formatted floppy disk. (For bootable non-RAID device, the copy path is* ***\\nVidia\IDE\Silicon_Image\Sil3132\SATA****)*
4. *The driver disk for* ***Silicon Image Sil 3132 SATARAID (SATALINK) Controller*** *is done.*

4. Choose the driver ***Silicon Image Sil 3132 SATARAID Controller*** that appears on Windows XP/2000 Setup screen, and press the <Enter> key.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows XP/2000 Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP/2000 installation.

† **Installing OS on RAID Drive**

1. After setup examines your disks, it will copy files to Windows installation folders and restart the system.
2. The setup program will continue and finish the installation after restarting.
3. Wait until Windows XP/2000 finishes installing devices, regional settings, networking settings, components, and final set of tasks, then reboot the system if necessary.

† **Confirming Windows XP/2000 Driver Installation**

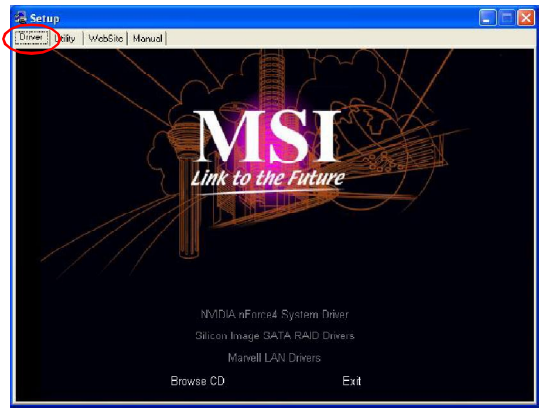
1. From Windows XP/2000, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver should appear.

Installation of NVIDIA System Driver

MSI provides a setup CD along with your mainboard, which contains the required drivers for your system, and many other useful and powerful utility to bring you the best experience for your office professional working and for your home leisure entertainment.

NVIDIA System Driver Installation

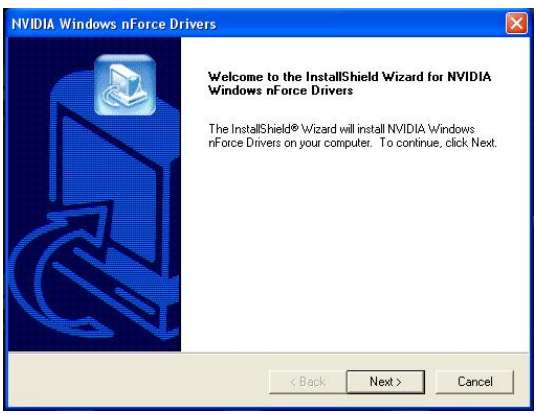
Click on the **Driver** tab and the screen below will display.



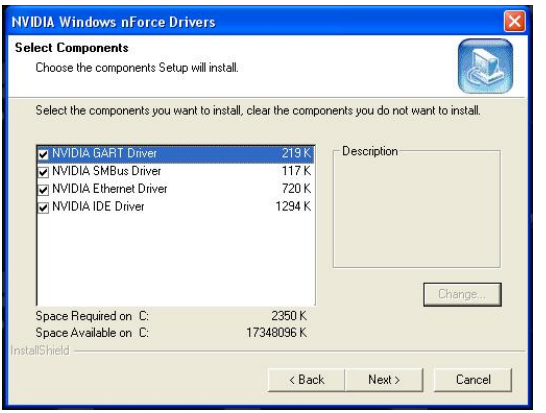
NVIDIA nForce4 System Driver

This driver is only available for Windows 2000 and Windows XP operating system. Please follow the following step to install the driver correctly.

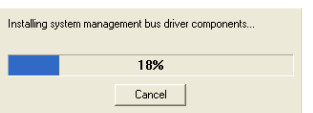
1. Click on the **NVIDIA nForce4 System Driver** button to install the NVIDIA nForce4 System Drivers for your Windows OS. Then the welcome dialogue will display. Click **Next** to continue.


NVIDIA Windows nForce Drivers
Welcome to the InstallShield Wizard for NVIDIA Windows nForce Drivers
The InstallShield® Wizard will install NVIDIA Windows nForce Drivers on your computer. To continue, click Next.
< Back
Next >
Cancel

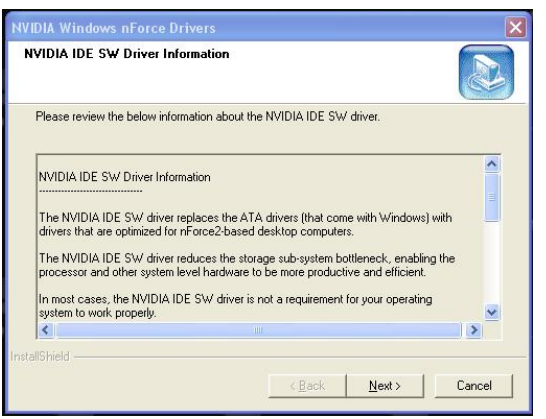
2. Then the following screen displays the available components to install. All the components shown here will be selected to be installed by default. Then click **Next**.


NVIDIA Windows nForce Drivers
Select Components
Choose the components Setup will install.
Select the components you want to install, clear the components you do not want to install.
NVIDIA GART Driver 219 K
NVIDIA SMBus Driver 117 K
NVIDIA Ethernet Driver 720 K
NVIDIA IDE Driver 1294 K
Description
Change...
Space Required on C: 2350 K
Space Available on C: 17348096 K
InstallShield
< Back
Next >
Cancel

3. The system will start installing the selected driver components automatically.



4. Then the following screen displays the information for the NVIDIA IDE SW Driver installation. Click **Next** to continue.


NVIDIA Windows nForce Drivers
NVIDIA IDE SW Driver Information
Please review the below information about the NVIDIA IDE SW driver.
NVIDIA IDE SW Driver Information
The NVIDIA IDE SW driver replaces the ATA drivers (that come with Windows) with drivers that are optimized for nForce2-based desktop computers.
The NVIDIA IDE SW driver reduces the storage sub-system bottleneck, enabling the processor and other system level hardware to be more productive and efficient.
In most cases, the NVIDIA IDE SW driver is not a requirement for your operating system to work properly.
InstallShield
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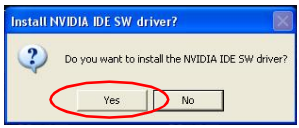
Next >
Cancel

5. Then the following screen displays the installation of NVIDIA IDE SW Driver. Click **Yes** to continue.

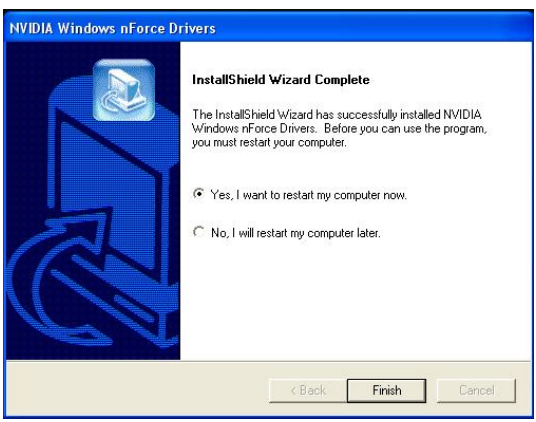


MSI Reminds You...

The installation of NVIDIA Firewall and ForceWare Network Access Manager. It is a software firewall to protect the softwares from hacking. However, it is strongly suggested that you do not install this component. *Please follow the instruction below to make a software firewall CD for yourself.*

1. *Insert the MSI CD into the CD-ROM drive.*
2. *Ignore the Setup screen and use "Explorer" to browse the CD.*
3. *Copy all the contents (including the sub-folders) in the* ***\\nVidia\System\CK804\Ethernet\Firewall*** *to a formatted floppy disk.*
4. *The driver disk for software firewall CD is done.*

6. The following screen indicates that the installation is complete. Click **Yes** to restart your computer or click **No** to restart it later.


NVIDIA Windows nForce Drivers
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed NVIDIA Windows nForce Drivers. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
< Back
Finish
Cancel